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Section on Practical Pharmacy and Dispensing

Papers Presented at the Sixty-Second Annual Convention

MINUTES OF SECTION

The Third Session of the Section was held on Thursday, August 27, on the boat while on the trip to St. Clair Flats.

Chairman Nitardy presided over the meeting and, as the first order of business, called for a discussion on Mr. Hall's paper on "A New Antidote for Corrosive Sublimate Poisoning," read at the previous session. [Printed in this issue.]

On motion of Mr. Raubenheimer, the paper was referred to the Scientific Section for study, pharmacologically, and the Secretary was instructed to forward the paper to that Section.

Mr. Jeannot Hostmann read a paper entitled, "Assaying Galenicals." [Printed in this issue.] This paper was briefly discussed by Messrs. Mansfield, Nitardy, Weinstein, Hynson, Raubenheimer and Hostmann, opinions being expressed that the cost of the equipment needed by a retail pharmacist was but slight and that such equipment was an extremely valuable addition to any store, Mr. Weinstein expressing the opinion that a microscope was a more essential agent for better work in a drug-store than is a cash-register.

Chairman Nitardy read a paper on "The Preparation of Flake Agar-Agar." [Printed in this issue.] In commenting upon this paper, Mr. Raubenheimer suggested cutting the agar-agar up with scissors, and Mr. Apple stated that he had found a tobacco-cutter useful in such work.

The next business considered was the pharmaceutical questions proposed by Chairman Nitardy, as follows:—

Question 1:—Creosote..... one drachm
Syrup Hypophosphites Co..... eight ounces
Cod Liver Oil..... eight ounces
Mix.

How would you dispense this, and why?

DISCUSSION.

PROF. OTTO RAUBENHEIMER:—"This prescription will necessarily be a "shake mixture" and should be dispensed with a "Shake Well" label. The creosote might be dissolved in the oil and then the syrup added gradually with constant shaking. A still better way would be to emulsify the creosote by means of powdered acacia and water, then to add the oil gradually with constant agitation and finally the syrup. The latter method is undoubtedly the more pharmaceutically correct."

MR. GRAY:—"I would mix the creosote with the oil and then add the syrup, using a bottle large enough to admit of a vigorous shaking on account of the oil and syrup not being miscible. I would dispense the preparation with a 'Shake Label.' Preferably, I would dispense the solution of the creosote in the oil in one bottle and the syrup in another, mixing the two preparations at the time of administration."

MR. SCHULZE:—"I would dispense this prescription in the form of an emulsion made by using powdered acacia and water, then thoroughly incorporating the oil in that way with the other ingredients and making a more sightly and palatable preparation."

MR. FERTÉ:—"I would mix the creosote with the oil and emulsify. Then add the Syrup Hypophosphites Compound."

PROF. LASCOFF:—"There are several ways of preparing this prescription, but the one approved by me is to emulsify the creosote and the syrup, with two and one-half drachms of powdered acacia, adding the oil in small portions until a uniform mixture results. I put this mixture aside for about ten days, and no separation occurred. In all other instances it formed a heavy thick mixture which could not be dispensed in an ordinary bottle."

MR. SASS:—"I would dispense it just as it is written, but would attach a shake label."

MR. APPLE:—"I think the physician should be consulted before adding any emulsifying ingredients. I would dispense such a prescription just as it is written with the caution to shake well before administration."

Question 2:—What do you think of using a specially shaped bottle for dispensing poisonous or dangerous preparations? Where would you draw the line as to what and what should not be dispensed in these kind of bottles?

DISCUSSION.

MR. LEMBERGER:—"When physicians mark the prescription "Poison," then it is justifiable to use such bottles."

MR. THOMAS:—"The pharmacist should use his own judgment in the matter."

PROF. RAUBENHEIMER:—"Suppose a physician writes a prescription for Fowler's Solution with direction to use two drops in water three times a day. What would you do? Would you label it 'Poison?'"

MR. OSSEWARD:—"In such cases we use a small strip-label stating that, to obtain the desired results, the medicine must be used strictly according to the directions. This label is printed with red ink on white paper. We would not label it 'Poison.'"

DR. HANCOCK:—"We use a label reading, 'Use with care according to directions.'"

PROF. RAUBENHEIMER:—"It is certainly very desirable that a specially shaped bottle should be used for dispensing poisons. Such is the custom in practically all the countries of Europe and it is only a question of time when this practice must be adopted in the United States. The best form of 'Poison bottle,' in my opinion is one provided with sharp points. These serve as a safeguard either day or night. It is also desirable to use a colored bottle for preparations intended for external use. Frequently, very frequently, such preparations as a carbolic wash, containing perhaps two per cent of phenol, are dispensed in a flint-glass bottle such as are used for preparations intended for internal use. I have been in the habit of using amber-colored bottles for those intended for use externally and I have found this precaution to be of value and to be generally approved."

MR. SCHULZE:—"I do not think that the shape of the container is especially essential in dispensing poisonous substances. I believe that after we have attached proper caution labels,

we have performed our duty. Carelessness, neglect to observe directions of labels, and suicide we can only partially guard against."

MR. FERTÉ:—"A colored bottle with a distinctive shape is desirable to be used if there is an understanding in relation to them. Medicines which in teaspoonful doses would be fatal should be dispensed in such bottles."

PROF. LASCOFF:—"Owing to the fact that many errors are made by persons taking, internally, medicines which were intended for external use, all bottles containing dangerously poisonous substances should be dark-colored and, preferably, of a triangular shape, to distinguish them from those containing medicines intended for external use."

MR. GRAY:—"A bottle with diamond-points, with a stopper of corresponding shape, is an excellent one to use in a limited degree, say for carbolic, nitric, hydrochloric, sulphuric, glacial acetic, hydrocyanic and nitro-hydrochloric acids, stronger ammonia water and formaldehyde, and for such preparations as Liquor Cresolis Compound, Wine of Colchicum, Fowler's, Pearson's and Donovan's Solutions and for potent tablets; also for fluid extracts of aconite, belladonna, digitalis, cannabis indica, adonis vernalis, gelsemium, hyoscyamus, nux vomica, opium, physostigma veratrum and strophanthus. These with the addition of oxalic acid, tartar emetic, paris green, corrosive sublimate, sugar of lead, potassium ferro- and ferri-cyanid, and potassium dichromate about covers the field. In my opinion the general use of the poison-label has a tendency to cause a disregard of the same."

Question 3:—What is the best container for dispensing ointments on prescriptions?

A PLEA FOR REFORM IN THE DISPENSING OF OINTMENTS AND SIMILAR PREPARATIONS.

F. W. NITARDY, PH. C.

In such common use are ordinary glass ointment-jars and metal boxes as containers for ointments and similar soft preparations, that their unclean and insanitary feature fails to impress us without special attention being called thereto.

Ointments, etc., are used as an application to skin, mucous membranes or exposed surfaces. These are frequently infectious, and by the usual mode of application the medicament must necessarily become contaminated. It is not an uncommon occurrence that several people, or various members of a family, will use an ointment, each, in their turn, dipping into it with fingers infected by the disease for the alleviation of which it is applied.

Aside from the dangers of contamination with pathogenic bacteria, the imperfect seal, as well as carelessness on the part of the consumer, frequently causes the preparation to become unsightly, altered or spoiled by oxidation, evaporation and other effects of exposure to atmosphere, light and dust.

Economically, these containers are wasteful as the last portions of their contents must frequently be thrown away. Even from a stand-point of convenience we can hardly find an argument in support of their use.

The collapsible-tube is free from these objections and serves as a container, protecting its contents from every form of contamination or exposure. It is easily filled and more convenient for the patient. Properly dispensed, it makes a neater and more attractive package. Its additional cost is trifling, compared to its advantages, and this can easily be added to the customary charge without causing complaint on part of the customer.

For prescription-use it is preferable to have lacquered pure tin tubes in assorted colors that fit into hinged boxes lined in corresponding colors. In this

way two or more tubes of ointments of the same size may be prescribed for one patient without danger of confusion. The number, doctor's name and directions are placed on the box. If desired, the tube may also be numbered, either before filling, with a steel numbering machine, such as is usually used for prescriptions; or after filling, with an ordinary lead pencil. In the former case it is best to have a cylindrical hardwood block with a flattened place on which a piece of cardboard is pasted to act as a cushion; the block should just fit the tube; the number may then be indelibly impressed into the soft metal of the tube. In the latter case it will be found that the marks produced on a filled tube with a bluntly-pointed pencil, knitting needle or similar blunt instrument, are sufficiently deep impressions to remain readable even after the tube is emptied and rolled or crumpled up. Such numbers on the tube are, of course, preferably placed near the shouldered end. Covered metal clips, capable of being numbered, may also be placed over the folded end.

The filling of individual tubes is most easily accomplished by rolling the preparation into cylindrical form with a piece of paper, slipping this into the tube, flattening the paper cylinder just beyond the portion holding the ointment and then withdrawing the paper, continuing to flatten it as it is being withdrawn, so as to force the ointment out of the paper into the tube. After one trial the operation will be found just as quick and simple as filling a jar with a spatula.

When tubes are used for such preparations such as should not come in contact with metals, the tube must, of course, be previously coated with a suitable lacquer. Collodion or an ethereal tincture of tolu, are suitable for this purpose. A little of this is poured into the tube and rotated so as to completely cover the inner surface, the surplus is then poured out and the tube allowed to dry. The operation takes only a few minutes.

Pure materials, care and cleanliness in compounding are put to naught if we choose containers incapable of properly preserving our products under the ordinary conditions to which they will be subjected after leaving our hands. This applies not only to ointments but to all preparations or products dispensed.

We should put forth constant effort to make each package leaving our prescription-department as neat, convenient and perfect as possible. We should never allow a package to go out that is incapable of keeping its contents in the desired condition, for carelessness in these things cannot help but reflect carelessness on the rest of our work.

DISCUSSION.

PROF. RAUBENHEIMER:—"Although the ointment-jar, especially the one of glass, has a strong hold on the pharmacist as well as with the public in the United States, it is only a question of time when collapsible tubes will come into general use for dispensing ointments, especially for those dispensed on prescriptions. It is my experience that their popularity among physicians is increasing. Their use is a sanitary method for dispensing ointments and they are also economical to use. What a contrast between the unsanitary earthern ointment-jar and the sanitary collapsible tube of today."

MR. NITARDY:—"To help to make the matter clearer I have brought some boxes and tubes along to illustrate my meaning. The ointment is dispensed in a colored tube and the color of the box and tube are alike. In the lid of the box we have reading-matter that tells to the doctor as well as to the patient the object of dispensing ointments this way. The label reads:—'Cleanliness and purity are of prime importance in all medicines. We have therefore, devised this package which will protect the contents from any contamination until

all is used, an end not easily accomplished when drugs of this nature are dispensed in the old style, in an unsanitary jar or box.'"

MR. JONES:—"What method do you use to fill the tubes?"

MR. NITARDY:—"It is a little hard to make that clear in a paper. Where there is many to fill it is best to use a machine. In the absence of a machine, place the ointment upon paper, roll it up small enough to slip into the tube, then pinch the paper and draw it out leaving the ointment in the tube."

MR. JONES:—"I have always used that method, but I thought there might be some better way. What do you charge for that extra service?"

MR. NITARDY:—"I cannot answer that question. I am not directly connected with the prescription-department. I have charge of the laboratory. I suggested this system to our prescription-department and I asked them to add a charge of five cents for the smaller and ten on the larger tubes. This package costs us complete for the smaller size about four and a half cents, and the larger ones about nine and a half."

MR. REYER:—"Would it not be possible to leave the paper inside the tube? It would protect the ointment from contact with the sides."

MR. NITARDY:—"It would do no harm. There would be no objection, except that the paper might be forced up and interfere with the emission of the ointment."

MR. RAUBENHEIMER:—"The older members can well remember the earthern-ware ointment jars, a very unsanitary container. From these we passed to glass, which with the aluminum tops were a great improvement. The collapsible tubes are however the real thing, more sanitary. Besides the sanitation they are really more economical, because the patient only has to take from the tube the amount only that he requires. The manner in which this is prepared by Mr. Nitardy seems to me to be rather an extravagant way however. As he puts it up I would charge fifty cents for it, whether a dram or an ounce. Do you place labels on the tubes?"

MR. NITARDY:—"It is a difficult thing to retain a label on an ointment-tube. We found that we could number the tube itself and that is what we are now doing. The box also is numbered so that the package-number and the box-number agree. We call attention to the need of always keeping the tube in its own box also by a label attached."

MR. APPLE:—"It occurs to me, that from a legal stand-point it would be advisable to label the tube. If you should be haled into court you could prove that you had taken that precaution against mistake."

MR. MAYO:—"In New York we have a law that requires the labelling of prescriptions in a certain prescribed way. It is doubtful if the courts would construe the application of a number as a compliance with the law."

MR. MYERS:—"As to the labelling of tubes or anything made of tin, I use a little banana oil, instead of tinct. of benzoin. The label then adheres very strongly to the tin."

MR. NITARDY:—"Collapsible tubes are very much the best for dispensing ointments. They are not more expensive than other containers, unless the tube is dispensed in another container."

MR. SCHULZE:—"It has been our experience that our trade, at least, prefers the screw-cap ointment-jar to the collapsible tube."

MR. FERTÉ:—"The best container for ointments is the collapsible tube. If the medicament of the ointment is one that will attack the metal of the tube it is well to fill the tube with tincture of benzoin, or some suitable lacquer, then drain them and dry."

PROF. LASCOFF:—"Collapsible tubes, in my opinion, are the best to use for the dispensing of ointments. They are cleaner than any other containers, can be readily made sterile; only a small amount of the ointment is exposed to air and thus rancidity is prevented, and when they are once emptied they are never re-filled."

MR. GRAY:—"I prefer an opalescent jar with an aluminum top. They look neater and therefore make the best impression on the patient."

Question 4:—Does the ordinary shop label, as supplied by most label-houses, give intelligent directions for use, proper and available antidotes in case of poisons and such other information as is desirable? Are abbreviations desirable? Do you consider a bottle of Spirit of Camphor, put out under a label reading "Spts. Camphor," any reflection on the pharmacist's knowledge?

DISCUSSION.

MR. APPLE:—"It is certainly advisable that "Poison Labels" should be printed in red ink and should have the antidote printed upon them, also a skull and cross-bones."

MR. GODDING:—"The State of Massachusetts requires all poison labels to be printed in red ink."

MR. NITARDY:—"I have found it very necessary to carefully observe the antidotes stated on labels by label-houses."

MR. GRAY:—"Store labels are improved by adding the dose, use and, in case of poisons, the antidote for same to the labels."

PROF. LASCOFF:—"I would suggest that the labels which are put on preparations of a poisonous nature should be carefully reviewed by pharmacists before accepting them from the printer, as one cannot be too careful in such matters. No abbreviations should be allowed on any labels. All names should be printed in full. For preparations intended for external use, it would be advisable to use a red label, on which is printed the words, 'For External Use.' For instance, Salt of Tartar is frequently confounded with Cream of Tartar, but if the former is labeled in red and marked 'For External Use' no misunderstanding will occur."

MR FERTÉ:—"To the first question I would answer 'No' and to the second one I would reply that it is unfortunate that so many of our profession do not differentiate between the singular and the plural. It would be as proper to label a bottle Tinctures Arnica, or a jar Zinc Ointments. Such ignorance is a disgrace. It is also inexcusable to write either carelessly or ignorantly of 'bromide of soda' or of 'permanganate of potash.'"

PROF. RAUBENHEIMER:—"The ordinary labels supplied by printing-houses need very careful supervision, especially as to directions for use and antidotes for poisons. Such labels as 'Rochelle Salts,' 'Spirits of Camphor,' are good illustrations as to the little care printers use in wording the labels. It is very desirable that the nomenclature of the U. S. P. and the N. F. should be used. The correct wording of a label may appear trifling, but, in my opinion it carries much weight with the intelligent public."

Question 5:—How would you advertise your prescription department?

HOW WOULD YOU ADVERTISE YOUR PRESCRIPTION DEPARTMENT?

JACOB DINER, PH. G.

Theoretically a prescription department should require no advertising. Just as all men are supposed to be equal before the Law in this greatest of all countries, but are not, just so should all pharmacists be equally qualified to properly compound prescriptions, and just so should pharmacy be a proper place and properly equipped for the compounding of prescriptions, and they are not.

While this is deplorable in one way, yet it has its advantages. For this very inequality of fitness and equipment gives an opportunity to the properly equipped pharmacist to bid for the patronage of the physician and the public, in the matter of prescription business.

Assuming then that you are educationally well-equipped, and that your laboratory and prescription-department are provided with all the paraphernalia necessary for the proper and scientific handlings of physicians' prescriptions it becomes your duty to yourself, to your physicians, and to the public to set before the last two, your reasons why they should patronize you in preference to "Tom, Dick and Harry." This can be done in a perfectly legitimate way without sacrificing one iota of your professionalism. Let us take it up *seriatim*:

Advertising to the Physician:—If your prescription-department is properly equipped and properly kept, invite the physicians of your vicinity to visit it as often as opportunity offers itself. Make it your business to let them see you and your clerks at work. Show them that the drugs and preparations entering into prescription-compounds are properly analyzed and carefully standardized. Have a good reference library and put it at the disposal of the prescriber. Perfect your checking system and show your physician how you safeguard his patient's health. Make accuracy, carefulness and cleanliness, your motto and show him that that motto is being lived up to and is not merely for ornamental purposes.

Experiment! Try to improve the appearance and palatability of the pet formula of your physicians and guardedly call their attention to it. Do not attempt to teach them, but submit your improved product for their consideration and approval. Be informed on vehicles and correctives for the drugs most generally used and discuss with your physician orally and by pamphlets the advantages of certain vehicles in the administration of certain drugs.

Take an active interest in your local, state, and national pharmaceutical associations and invite your doctors occasionally to your local meetings. Never, under any consideration, allow a physician to see another's prescription, except by consent of the prescriber; and lastly, rigidly put down counter-prescribing. Briefly stated:—Know your profession and let your physicians know that you know it.

Advertising to the Public:—This is even more difficult, at first sight, than advertising to the physician, yet it is comparatively easily accomplished. You may not take the public into your back room, but you can, figuratively speaking, take your back room to the public. Have photographs of your prescription-department reproduced in neat pamphlets telling as much as possible about the arrangement, uses, etc., of the various things appearing in the picture. Show, by photograph, your method of compounding and checking, and describe in detail how it is done. Let the prescription be an advertisement for you from the moment it is brought into your store to the time the medicine reaches the patient's hands, and even beyond that.

If you must follow the trend of modern commercialism in your store, make an exception with your prescription-department. Have the receiving place for incoming prescriptions in a quiet part of the store. The anxious mother holding a prescription, on which, in her opinion, at least, depends the life of the dearly beloved child, is not greatly cheered by the light and airy persiflage floating between Alphonso at the soda-counter and Marie at the candy-stand across the aisle. Let your receiving man be a well-posted man of somewhat mature age. Twenty-one is not very tolerant with sixty-five or over, nor does twenty-one consider that beneath a ragged cloak may be as tender a heart, or even one more tender, than beats beneath the sable coat. A word of sympathy at the proper moment is worth more than all your trading stamps, souvenirs and coupons combined.

Let the receiving man be on the alert to take the prescription as soon as the customer appears with it. Time passes slowly for the bereaved heart and hope begins to be in the ascendency with the moment the work on the prescription is under way. Let no noisy conversation, or any conversation for that matter, reach the waiting customer from the prescription-department. Suspicion may arise that all of the necessary attention is not centered upon the compounding. As to the medicine itself, too much cannot be said about containers, labels, wrapping, etc. The public can judge the contents only by the package. It has been my experience that people judge, and justly so, that the man who pays attention to the details of the package is not likely to be careless about the contents. In these modern times of machinery above manual labor, one can hardly justify an illegible handwritten label on a bottle, box or jar of medicine. When a typewriting machine is obtainable for as little as ten dollars, why write by hand?

Expensive containers are not essential, neatness and cleanliness and carefulness are far more important. An expensive prescription-bottle "Adorned" with an illegible handwritten label, made still more illegible by smeary blotting and thrown into as many folds as the modern full-dress shirt, by careless pasting is certainly not a thing of joy to behold.

Lastly—do not delay delivery. It is true the medicine may not have to be taken until bedtime, and here it is only 6 p. m., nevertheless, the patient or those caring for him or her are anxiously waiting for it. It is their anchor of hope, why keep them in suspense?

Summarizing: I might say that in advertising a prescription-department, follow the rules of all good advertising. "Have something worth while to talk about and then talk about it in a manner that is worth while."

DISCUSSION.

MR. JACKMAN:—"In my opinion the most effectual way is to call upon the physicians and exploit the preparations of your own manufacture. Show them your own preparations of Milk of Magnesia, Elixir of Lactated Pepsin and other preparations in which you take pride. Such detail-work pays better than any other form of advertising."

PROF. RAUBENHEIMER:—"Many methods have been suggested for advertising the prescription-department and much money can be spent foolishly without obtaining results. After all is said, it is the physician who will recommend your pharmacy or not for the preparation of his prescriptions. It is therefore necessary to convince them of the reliability, in fact of the superiority of your prescription-department. Advertise or preach to them your pure drugs and chemicals, your reliable preparations, your facilities and ability for manufacturing, your carefulness, conscientiousness and accuracy in the compounding of prescriptions, with no substitution. Have scrupulous cleanliness not only in your prescription-department but in your entire store. Above all do not advertise your prescription-department as being 'cheap.' Cheapness and good medicine are certainly incompatible. I take especial pride in having the reputation of being 'rather expensive on medicines.'"

MR. SCHULZE:—"I think one should modestly call the attention of the public to this department in your various advertisements. In the sale even of stamps we use an envelope about three inches long and one and three-quarters wide, upon which is printed an advertisement of our prescription-department. These are much appreciated when the stamps are not to be used immediately. We, also make window-displays of sick-room requisites among which we intersperse signs calling attention to this particular department."

MR. FERTÉ:—"We advertise mainly to the physicians, sending them circular letters made to appear personal. If this does not appeal to you, write to each of them a personal letter. Your advertising should be high-class, and odd printed matter. Conventional methods do not pay."

PROF. LASCOFF:—"To advertise my prescription-department, I employ the local paper, the church-bulletins, send out circulars and have window-displays, keeping always before the mind of the public that their prescriptions will be accurately dispensed and properly checked."

MR. GRAY:—"Advertise your prescription-department only to physicians. Call their attention to the quality of the drugs you use. Good prescription service is summed up in the following specifications:—A complete outfit of all necessary utensils for dispensing; a system calculated to prevent error; a knowledge of possible deteriorations of stock so as not to dispense any article of lessened or of no value and to be as expeditious as possible consistent with safety, for no one likes to wait long for anything, particularly for medicine."

Question 6:—What constitutes good prescription service?

WHAT CONSTITUTES GOOD PRESCRIPTION-SERVICE?

FRANKLIN M. APPLE, PHAR. D.

According to the definition, given by Webster, of the word service, it means "the performance of labor for the benefit of another, or at another's command;" also "duty performed in, or appropriate to, any office or charge."

With this definition of the word service accepted as correct, we will proceed to ascertain whom we serve when occupying the position of prescriptionists.

It will be admitted, universally, that we serve our patrons, for whose support we make earnest entreaties, so as to receive as a minimum reward for our services to them, an income sufficient to meet our daily wants.

Prescriptionists also occupy the *role* of servants or assistants to the medical practitioners, who write prescriptions for their patients' welfare; and it must not be overlooked that our services are rendered, automatically, to ourselves and those dependent upon us, in accordance with the character of the labors we perform.

The question is one not only concerning service, or prescription-service, but involves the quality of the service rendered, as note the language of the query: "What constitutes *good* prescription-service?"

To render good prescription-service it has been proven by the experiences of our forefathers, that the qualifications required in the ordinary walks of life to insure success as a result from satisfactory services rendered to society, are not sufficient to qualify one to properly fill the role of prescriptionist.

The education that the average merchant needs, must be re-inforced by education along special lines, coupled with a practical knowledge of the medicinal agents one is expected to handle, acquired by close contact with the same, thereby qualifying one to judge of their purity and quality.

A course of study in a first-class school of pharmacy is an absolutely essential qualification to render good prescription-service in these days of enlightenment and progression, and those days of study must be but the beginning of a life-long term of study and research in order to keep apace with the rapid progress that is being made in medication in various forms; and also to avoid being made the victim of any unscrupulous dealer, who would send out goods of inferior quality, depending upon an ingeniously worded label to release himself from liability of prosecution.

Watch very carefully the labels affixed to goods received, is a wise plan to follow, especially in regard to such goods as are not labeled as U. S. P. or N. F. standard.

The source of supply of one's goods should be most carefully decided upon, in defense of all of the parties one serves, as *quality* should be the most important consideration in assembling one's stock of drugs and all other materials in his establishment.

Having satisfied yourself of the quality of the goods received, it is essential to protect and preserve the same in accordance with the latest knowledge upon the subject, by providing therefor suitable containers and conditions of temperature and moisture that will prevent their deterioration.

One of the most vital factors in rendering good prescription-service to the public and to medical men, is the character of the clerks employed by you.

It is an absolute impossibility for a pharmacist to render a personal service at all times and at all hours to all his patrons, unless he has a very small business and makes a slave of himself, thereby jeopardizing his health and robbing his family and himself of all social life; hence, the human factor must be taken into consideration in the management of our prescription-department and the selection of an assistant is a most important duty to perform.

To have a well-qualified proprietor associate with himself a questionably-qualified clerk is a very unwise act, and I might even say, in some cases, a gross deception, which ultimately will be detected and bring its own reward.

One of the weakest spots in our pharmacy laws is that of the rights that are vested in the semi-prepared clerks, who are granted the privileges of a Q. A., when it is coupled with the broad interpretation of these rights that prevails in some states.

The rights and privileges granted to them in this state is a shame and a disgrace to a professional calling; and you cannot find their counterpart in any other professional walk of life. The rights and privileges they enjoy are the result of bowing down to the demands of commercial considerations at the expense of professional ones.

The candidates examined in this state are now given a more severe test than was the custom some years ago; but a clearer definition of their rights, and greater limitation of the same is essential to an improved prescription-service.

These are the days when the sign "Safety-First" is met with upon all sides, and it is one of the very important reminders that prescriptionists should keep constantly before themselves and their employees, so that when one might relax his vigilance and become somewhat unmindful of his responsibilities, he will have a never failing, untiring sentinel to remind him of his obligations.

The question of safety-first involves every move made in handling the prescription from the time of its receipt until its delivery to the home or the hands of the customer.

Ofttimes the safety-first principle can be attached to the container of the compounded prescription by affixing thereto appropriate labels or stickers; also by using appropriate, distinctive containers.

By the proper use of stickers one can notify the patient what precautions are necessary to properly preserve the medicine, thereby demonstrating one's knowledge of the properties of the same, which leads to a greater degree of confidence in one's ability as a compounder of drugs and prescriptions, with its beneficial results, financially.

In the selection of containers for the results of one's prescription compounding, evidences of care and thought upon this subject can be demonstrated practically, to the decided advantage of his customers. A second-class container for a first-class product is very poor business policy.

The evidences shown in the pharmacist's prescription-department of his knowledge concerning hygiene and bacteriology, will most assuredly leave a lasting impression upon those who have access thereto; and, if one demonstrates, by the location of his prescription-department, that it is an important part of his establishment, greater respect will be shown for it by the public, which includes the medical practitioners.

What may appear to some as a minor, unimportant point, in the conduct of their prescription-departments, is the question of observing the injunctions placed upon the prescription by the creator thereof—the physician.

I have gained and held the support of several medical practitioners, by always placing the copy of the prescription upon the label when so directed. The physicians argued that, if a druggist would leave off of the label the copy, he would

be quite likely to leave out of the prescription an ingredient that he might not have convenient or not in stock.

When serving the medical men as their agents or compounders we must not forget that they are the creators of the prescription, around which they have a perfect right to throw restrictions or safeguards, in their interest, or the interest of their patients. Our commercial interests are the last ones that can receive consideration, and, automatically, ofttimes are best served by respecting fully the instructions appearing upon the prescription.

If the medical adviser wishes to control his patient or observe the results of his prescribing, that is his privilege and, at times, his duty.

Prompt attention should be given to all work and it should not be delayed one minute by anything except by a most urgent call for an emergency necessity of more vital importance than the work in hand. No customer will object to such an act if the proper explanatory remarks are offered if they are needed.

We have now reached the point where, to my mind, the professional phase of prescription-service ends, and where the commercial side of the question presents itself.

The commercial side of this question cannot be divorced from the professional side, except where no charges are made for services and materials and where no expense of delivery are to be taken into consideration; but as we are not engaged in such charity work, from force of necessity we must take into consideration the Biblical statement—"the laborer is worthy of his hire,"—and collect from those whom we serve a recompense for materials supplied and services rendered.

When adjusting the same in an equitable manner the price should consist of the total, resulting from charges for services, plus that for materials supplied. This plan is not followed by some, apparently, judging from a controversy I had recently with a customer, who asserted that she was accustomed to having a prescription, calling for five ingredients, compounded for 50 cents, and one-half of the same for 25 cents. Needless to say, we did not fill one-half the quantity for her at her price, for reasons which we fully explained to her. Such compounders show an absolute lack of ability to intelligently price prescriptions and such action also raises in my mind a question as to the ability of the proprietor to properly compound it.

The delivery of compounded prescriptions by proper help, is of more import than is usually believed by proprietors, and it receives in many cases little thought.

The way to demonstrate claims for first-class goods, a first-class store, and first-class service, is to employ first-class employees from the porter to the prescription clerk, as that these will beget confidence for the unseen services rendered to society.

Where side lines are handled in a drug-store it is policy to have the quality of the same and the services rendered at these departments of such a standard that they will not indirectly injure the reputation of the prescription-department; and it is suicidal to neglect one's prescription work to give attention to side lines.

A library of reference books, volumes of the leading drug journals, which assuredly includes the Journal of the American Pharmaceutical Association, and

an assortment of price lists should be found in every first-class pharmacy—and their pages should show the earmarks of frequent usage.

Needless to say an assortment of proper apparatus should be in stock to carry out the processes that one will be called upon to oversee, for it is surprising how easily some processes can be carried out with the proper apparatus that are difficult to complete without them.

To summarize the whole question I will state that Quality, Safety-First, Equipment and Mentality are the prime essentials in giving good prescription-service.

DISCUSSION.

PROF. RAUBENHEIMER:—"Prescriptions should be compounded carefully and conscientiously and its ingredients, as well as the doses, should be properly checked. There is one item which is too frequently sadly neglected, and that is the prompt delivery of medicines. It should be borne in mind that the patient usually waits as long as he possibly can before he consults a physician and that consequently he is in need of the medicine almost immediately. I always insist upon the prompt delivery of all medicines."

MR. SCHULZE:—"I believe good prescription service consists in being properly equipped to fill prescriptions,—first, by having the proper materials, second, by having proper apparatus, third, by having properly-qualified men and fourth by dispensing prescriptions in as neat and attractive a manner as is possible."

MR. FERTÉ:—"Good prescription service consists in dispensing the prescription correctly and knowing your profession sufficiently to know that your work is right. Use the highest class of goods and dispensing conveniences, and have neatness in your work. Lastly use speed in the preparation of medicines required."

PROF. LASCOFF:—"To have good prescription service, the following rules should be observed:—

1. Sanitation. This means absolute cleanliness in all departments of the store
2. Close attention and personal supervision by the proprietor.
3. Buying only drugs and chemicals of the best quality.
4. Courtesy and amiability to all patrons.
5. Avoidance of the 'Just as Good' habit and misrepresentation.
6. The proper standardization of drugs, chemicals and preparations therefrom.
7. Keeping the prescription department entirely separate from the store.
8. Last, and most important—A proper checking system in not alone the prescription, but all departments. In prescription work, a double system of checking is employed. Not only when the ingredients are measured or weighed, but on returning the bottles to the shelves, it is obligatory to check them once more."

Question 7:—What utensils and apparatus do you consider necessary for the prescription-department of the average pharmacy? What further equipment would be desirable?

DISCUSSION.

MR. FERTÉ:—"A druggist should have in his prescription-department. a complete assortment of metric and ordinary graduates, (not combinations), mortars of glass, wedgewood and porcelain; a scale sensitive to half a milligramme, one to weigh from one gramme to one hundred grammes; a tablet-machine, a suppository machine, (not one of the cheap cast-iron kind); spatulas of all kinds, steel, rubber and horn; an assortment of sieves, a pill-machine complete and glass slabs for ointments."

MR. SCHULZE:—"The essentials for the prescription-department are,—Three pair of scales for weighing the following maximum quantities, five grains, twenty grains and two ounces. Larger quantities to be weighed on the general dispensing scales. A full set of graduates including those of the metric system; complete sets of apothecaries and metric weights; mortars ranging from two ounces to one gallon in capacity; spatulas ranging from three to six inches and one or two putty knives; a pill-tile, roller and paddle for rolling pills; an ointment-tile; a tablet machine; an infusion-mug; a small glass stove or electric infusion-cup; a small microscope; glass stirring-rods, a suppository-mould; casserole or other dish for melting cocoa butter for suppositories, set of small evaporating dishes, small funnels for filtration; blue and red litmus paper and a Florentine flask."

MR. GRAY:—"I consider these things essential in a prescription-department:—One half-dozen mortars, a complete equipment of graduates, from sixty minims to thirty-two fluid ounces, apothecary's measure and from 5 c. c. to one litre in the metric system, an absolutely

dependable prescription scale with weights from one-half grain to two drachms and from five cg. to five grammes; a half-dozen glass funnels, graded sizes; three percolators of varying sizes; two burettes, a half-dozen Florence or Erlenmeyer flasks; a volumetric flask; two evaporating dishes; one casserole; a Bunsen-burner; three glass stirring rods; two beakers; two pipettes, twenty-five and fifty c. c.; a retort-stand; nest of test-tubes; a small file, a pill-tile, a half-dozen spatulas and a suppository-machine unless the pharmacist makes these by hand."

PROF. LASCOFF:—"As I stated in an address before this section previously, a pharmacist should be in the possession of the following apparatus:—Six mortars and pestles, (porcelain); two glass mortars with pestles, three porcelain evaporating dishes; six spatulas of different sizes, of metal and two horn or bone spatulas; half a dozen glass rods; one infusion-mug; one dozen graduates from one drachm to a quart; one dozen graduates from fifty cm. to one thousand cm.; one accurate base-scale, capable of weighing one grain or less; troy and metric weights from one grain to twelve ounces and from ten milligrams to one thousand grams; two separate poison-closets; two tablet-moulds, triturate and hypodermic; two Florentine flasks, two sieves, one copper water-bath, two percolators, funnels of differing sizes, supports, etc.; a microscope if possible, a sterilizer, a centrifuge if possible; a dozen test-tubes and a burette, and two hydrometers. He should have also a special closet holding the most important U. S. P. reagents, an outfit for urinalysis and the Pharmacopœia, National Formulary and other reference books."

Question 8:—How far may a druggist go in marketing his own preparations, without usurping the rights of physicians or becoming unethical? Would there be any difference, ethically, in marketing preparations made by the druggist or those made by some coöperative organization to which he belongs? Would there be any difference from the same standpoint between preparations of such a coöperative organization and any regular patent-medicine manufacturer?

DISCUSSION.

PROF. RAUBENHEIMER:—"I could never understand why objection should be made to a pharmacist manufacturing and marketing his own preparations, especially the simple household remedies. There is a constant demand for these by the American public and the pharmacist who does not cater to that demand loses prestige and revenue. Why should these simple household remedies that are daily called for interfere with the practice of the physician? Of course it is understood that such remedies should be entirely free from habit-forming or narcotic drugs. Above all it is the pharmacist's duty and his birthright to manufacture these medicines himself, and he should boldly state that fact of his making them upon the label. The pharmacist who himself makes these preparations will undoubtedly gain a reputation, not only in his own locality but also farther away from home."

MR. SCHULZE:—"There is no difference in selling preparations, the formula of which is known to the manufacturer only. But there is a difference in marketing the official preparations put up in acceptable packages to meet the demand for household preparations. This is a demand which will continue as long as mankind suffers from coughs, colds, constipation, indigestion, etc., and believe that they are competent to treat themselves. If the pharmacist is wise he will try to induce such people to interview a physician, especially if they return for the preparation of a prescription. It is not always possible to get them to go to a physician, but if it is known that you are giving that advice, physicians will be better satisfied."

MR. GRAY:—"I think a pharmacist may properly recommend his own preparations in all cases where the customer specifies the purpose for which he wants a remedy. As long as he does not diagnose the case he is on the right side. In cases of a specific nature, he should certainly advise the patient to call upon a physician. So far as to marketing coöperative preparations, I would say that, in my opinion, there would be no difference, ethically, in marketing his own preparations or those of a coöperative company provided that one knows the materials of which they are composed."

PROF. LASCOFF:—"It is positively essential for a pharmacist to put up his own preparations, and, in order to be strictly ethical, these should be some of the official preparations, such as Syrup Hypophosphites Co., Beef, Iron and Wine, a good laxative syrup and tablets, cough syrups without opiates, etc., etc. I do not believe that any physician would object to this. One of the great advantages of this practice is that your name is on the preparations and the profit is much greater."

MR. APPLE:—"In the sale of such preparations over the counter it would be inadvisable to use the official titles on the labels, otherwise the people would soon be informed as to their designations and perhaps purchase on their own initiative."

Question 9:—What do you think of tinctures made by diluting fluid extracts?

Should formulas for making tinctures in this way be given on fluid extract bottles?

DISCUSSION.

MR. OSSEWARD:—"I think we should be honest and if we use preparations made from fluidextracts we should call them diluted fluid extracts."

DR. SAYRE:—"We find among the samples collected in Kansas, that preparations made from fluid extracts do not attain the standard required."

MR. NITARDY:—"To my mind, tinctures should not be prepared from fluid extracts, but they should be always made according to the U. S. P. or N. F. The last percolate should always be tested for alkaloidal reaction after the proper amount of the menstruum is used."

PROF. LASCOFF:—"I am absolutely opposed to making tinctures by the dilution of fluid extracts. We should follow the official methods in every way. And as that manner of making tinctures is not official, no formulae should be printed on the labels of fluid extracts for the manufacture of tinctures in this way for such a practice tends to lead the profession away from the true standards and methods."

MR. GRAY:—"I think it perfectly proper to make tinctures from fluid extracts or from powdered extracts that are standardized. There is the saving in freight and in containers and it gives the pharmacist a little part in the work when he cannot afford to assay his own tinctures. It is a matter of indifference as to official tinctures whether the formula is printed on the label or not, but it might be well to print such formulas on non-official fluid extracts."

MR. SCHULZE:—"Tinctures made from fluid extracts do not have the appearance of official tinctures and their physiological effect is often different. I think, therefore, that no formulas of such character should be placed on fluid extracts. The practice of making tinctures from concentrates only proceeds from and assist to increase the laziness of pharmacists and their assistants."

MR. FERTÉ:—"If the tincture and the fluid extract are made with the same menstruum,—ginger for example,—and the fluid extract is not saturated or super-saturated with extractive matter it is proper to use the fluid extract to make a tincture; not otherwise. Couch Grass is another example. Fluid Extract of Couch Grass is simply an infusion preserved, and it is proper to make a diluted infusion from the concentrate. But this is not the case with Digitalis."

PROF. RAUBENHEIMER:—"The practice of printing formulas for making tinctures from fluid extracts should be condemned for the making of such tinctures is bad pharmacy. Fluid extracts are very frequently made by using an entirely different menstruum from that employed in making the tinctures of the same drug."

Question 10:—What are the essential qualities of a good cold cream? Of a good hand lotion? Can you offer a formula embodying these qualities?

DISCUSSION.

MR. GRAY:—"The essentials of a formula for cold cream depend upon whether you desire it to be absorbent or non-absorbent. If you desire it to be absorbed you must use a vegetable oil. But if not use mineral oil. In all cases the ingredients must be thoroughly incorporated. I present two formulas which I think will be found to produce superior products.

Absorbent Cream.

Oil of peach-kernels	8 ounces
White wax	1 ounce
Spermaceti	1 ounce
Water	2 2/3 ounces
Borax	5 grains
Oil of Rose	25 minims
Oil of Patchouli	1 minim

Mix sec. art.

Dissolve the wax in the oil, use gentle heat or preferably a water-bath. When the wax is dissolved, add the water, previously heated, and in which the borax has been dissolved, slowly, constantly stirring with an egg-beater. When cold, add the perfume oils.

"Non-absorbent, but nicer in appearance, is the product produced by using the following formula:—

Theatrical Cream.

White Russian Paraffin Oil	8 ounces
Ceresin and White Wax of each	2 ounces
Water	3 and one-fourth ounces
Borax	5 grains
Oil of Rose	25 minims
Oil of Patchouli	1 minim

Proceed as in the former formula.

Any cheaper odor may be used, such as Almond, Orange Flower or Synthetic Rose.

Hand lotions should have emollient properties, be thick yet easily absorbed or dried on the hands, with a pleasing odor and appearance. Here is a formula which I have found to give great satisfaction:

Powdered Tragacanth	1½ ounces
Alcohol	16 ounces
Glycerine	8 ounces
Benzaldehyde	60 minims
Oil of Lavender flowers	20 minims

Mix thoroughly, and add quickly water enough to make one gallon."

PROF. LASCOFF:—"The essential qualities of a good cold cream are to use pure ingredients, which have a pleasant odor and are bland. The following formula was given to me about fifteen years ago and I have been very successful in its use, receiving quite a demand for the product.

Cold Cream.

White Wax	12 and a half ounces
Paraffin Oil	48 ounces
Distilled Water	24 ounces
Borax	6 drachms
Oil of Rose	q. s.

"For dispensing purposes however the formula of the Pharmacopœia should be used and nothing else. For a good hand-lotion, Glycerine and Rose Water, with Tincture of Benzoin is the best. A good formula was suggested by Dr. Apple, of Philadelphia, printed in the Proceedings of the A. Ph. A."

PROF. RAUBENHEIMER:—"The official formula for Ointment of Rose Water can be modified into a Theatrical Cold Cream by using Paraffin Oil in place of the oil of almonds. The cold cream produced by use of this process has the great advantage of keeping perfectly without change. There is consequently a large demand for such a preparation."

MR. FERTÉ:—"I would ask another question in reply to this query,—Is any Cold Cream particularly good? The one that sells is good. There are so many 'good' formulas available that I think it not necessary to discuss them. 'A good all-around hand and face lotion is thin quince mucilage with a small amount of glycerin, alcohol, benzoin, menthol and some antiseptic and perfume.'"

MR. NITARDY:—"The whole secret of the keeping quality of cold cream is in the proper balance of the ingredients of which it is prepared. A small amount of stearin is of advantage I have found."

MR. OSSEWARD:—"The jars in which the cold cream is placed should be warmed before they are filled, to about the same temperature as the cream, to prevent its contraction from the sides of the receptacle. If this is done this trouble will be avoided."

PROF. RAUBENHEIMER:—"It is also absolutely necessary that the oil and the water should be of like temperature before they are incorporated."

Question 11:—What argument have you in favor of the retail druggist making his own tinctures, syrups, elixirs and other simple pharmaceuticals? Have you any arguments against this practice?

SHOULD THE RETAIL DRUGGIST MAKE HIS OWN PREPARATIONS?

HOMER C. WASHBURN, PH. C.

To what extent the retail druggist should engage in the manufacture of his own preparations, such as tinctures, syrups, elixirs and other simple pharmaceuticals, is a question that has been much discussed, *pro* and *con*, but which, I believe, is still a live and debatable one.

In considering a subject of this kind, it may be well to note the changes in economic and sociological conditions, which must be held responsible, to a large extent, for much of the business and commercial "status quo" of the present time.

Going back in the history of pharmacy, we find that the druggist, or apothecary, originally made all the preparations and medicines he supplied for the cure or

alleviation of man's ills, and that the drug- and chemical-manufacturing plants, which are such important factors in the world's business of to-day, were not only unknown and un-thought-of, but probably not needed. When we think of all this change that has come within a few generations, and note the concentration of the drug-manufacturing business within a comparatively few commercial centers, we are prone to consider pharmacy as a lost art.

However we view the subject, only a casual observation will convince us that the changed condition is not peculiar to pharmacy, but is just as true in all lines of manufacture and in most of the arts as it is in pharmacy. In short, the change is merely the progress or regress of certain evolutionary conditions that are affecting, alike, nearly all lines of human activity.

Only one-hundred years ago, and in many localities, a great deal less, each family was concerned in the production of nearly all the necessities of life. Not only were the food products grown or gathered by each family for its own needs, but even the wool and the flax that was to constitute its clothing, was raised, spun and weaved, and manufactured into garments by each family for its own use. Not only this, but if a man wanted a wagon or a sled, he made it by the toil of his own hands.

Such illustrations might be enumerated *ad infinitum*, being limited only by the number of articles of family use, but the foregoing will amply illustrate my point. Only I might have added, that most of the herbs used in the household remedies, which were so popular in those days, were also collected by the family for its own use.

But times have changed, and whether we view this kaleidoscopic, evolutionary change as of benefit or of harm, we must bow, to a certain extent, to the tendencies of the times.

To-day it is not uncommon to find our young people, and especially those among the city bred, who, while wearing the finest of raiment and traveling in conveyances that are the best product of the skilled mechanic's art, find their most serious employment in idleness and in attending places of amusement, little knowing, and caring less, where the clothes came from that they wear, or by whose toil they are permitted to enjoy the ever-changing variety of modern society

The sociologist and the psychologist have very concrete notions as to the effects of such idleness, upon the moral and spiritual tendencies of our time, and I quite agree with them, but I fully believe that it is only one phase of modern, industrial tendencies and that we should do whatever is possible to correct the evils of this tendency. However, we will be able to accomplish more real and lasting good by methods that are evolutionary and not revolutionary—by working among our own people in our own chosen profession and doing whatever we can in a quiet, but no less positive way, to encourage habits of industry and usefulness among those, who being our apprentices to-day, will be our successors to-morrow.

Personally, I do not believe that many of our modern, economic and sociologic tendencies make for the betterment of the race. Centralization of production, along each of the various lines of business, undoubtedly results in the production of articles at a lower cost, but it also results in the enforced idleness of others,

and to my mind, idleness is the most dangerous tendency of our time. I believe that this talk about the concentration and minimization of labor, in order to allow more time for intellectual and spiritual development is nonsensical. On the other hand, I do believe that hard work and even hardships, such as our forefathers had to endure, made for better intellectual and spiritual growth than the present-day, easy mode of life. In support of this contention, I would merely point to the names of Jefferson, Webster and Clay, or to Whittier, Emerson and Lowell—products all of the days when hard work and a struggle for existence was the rule. According to President Eliot's definition of education, Abraham Lincoln was the best educated man of his time, and the story of the struggles and hardships of his life are well known to all.

So, coming specifically to the point under consideration, I believe that the more a druggist plies the fundamental warp and woof of his profession, the more nearly will he deserve being called a professional man. The idea that has gained ground in later years, that the druggist is merely a store-keeper or business man is only the logical and inevitable outcome of his tendency to handle the products of other's labor, allowing the skill and the science of his predecessors to gradually slip away.

I am not advocating that the retail druggist should attempt to prepare all his preparations. Many of them would involve too large an outlay of apparatus for the amounts he would use; others that require standardization, and especially those that can only be standardized physiologically, require a degree of expert knowledge and *technique* that we can not logically expect the retail druggist to acquire, but in the average run of preparations, such as most of the tinctures, syrups, elixirs, etc., for which only a reasonable amount of expert knowledge is required, I believe that the benefit derived would justify the effort involved. And, in this connection, let me say, that the benefits gained can not all be reckoned in dollars or cents. There should be some pecuniary saving, to be sure, in such articles as are used in fairly large amounts, because the same shelf-bottle or container will serve its purpose indefinitely, while with every purchase of such article, from the manufacturer or jobber, a different bottle, label and stopper are used. Also the average retail druggist, or his clerks, could find time to make many of these preparations during moments that are not otherwise employed, and no one will contend that, in buying these preparations ready-made, we are not paying for the time, labor and expert knowledge of the individual who does manufacture them. Add to this the freight and cartage. These savings are mere trifles to be sure, but the drug business is made up of trifles, and in the aggregate they amount to considerable.

Even though the expense involved were as much as the article would cost, there are still, at least, two things to be considered—the psychological effect upon the druggist himself, and that upon the customer. The druggist who clings to at least a portion of the professional and technical phases of his calling, is benefited psychologically, at least. He takes more pride in his work, feels a greater confidence in himself and develops a higher sense of responsibility, all of which undoubtedly increase his usefulness to the community. These make him indeed a better man and a better druggist.

From the view-point of the customer, it is scarcely necessary to say that the

druggist who is known to manufacture a part of the preparations he handles, inspires confidence. The layman is usually a practical sort of an individual, and generally views the druggist as a professional, or just a plain business man, in about the ratio he deserves.

Just what preparations should be made by the retail druggist, is largely a matter of local conditions, and each individual is best qualified to answer the question for himself. But he can only do so, with any degree of intelligence, after a careful study of the matter. I would not advise any druggist who has not been in the habit of making his preparations, or one who is just starting in, to plunge into the matter blindly and attempt to make any considerable number at the start, but rather to begin gradually, increasing the number from time to time as seems best. Under such a plan, I believe an active interest will soon develop in any man deserving of the name of druggist, and that with an average degree of business acumen, it can soon be determined what preparations can be made to the best advantage.

To the list of official pharmaceuticals, I would strongly urge the manufacture of such preparations as cold creams, toilet lotions, etc. Formulæ, from which preparations of this type may be made, are easily accessible, and the confidence-inspiring influence their use gives the customer, is certainly worth while.

In the foregoing arguments, I have purposely endeavored to treat the subject academically, laying special stress on the sociological and psychological phases. Indeed, I believe that any business with the psychology of that business left out, is comparable to a boat simply drifting with the current and without the directing influence of a guiding helm.

DISCUSSION.

PROF. LASCOFF:—"If a man desires to call himself a pharmacist, he must, of necessity and desire, make all of the preparations named, to be at all worthy of that name. Not only that, but it is cheaper and his preparations are better and fresher."

MR. GRAY:—"In my opinion a druggist should make all of his elixirs, syrups, emulsions and in fact everything he uses in the way of preparations, excepting fluid extracts, tinctures, pills and tablets. With these exceptions it pays to do so."

MR. SHULZE:—"The arguments are all in favor of the druggist manufacturing his preparations. There is not one good argument against this practice. First and foremost, he knows just what they contain. Second, they are properly made and third, he can save from twenty to forty per cent. Some may consider the last item of the first importance."

MR. FERTÉ:—"It does not pay to make tinctures, because of the loss of the alcohol remaining in the marc. The same is true of fluid extracts. But it does pay to make elixirs, syrups, ointments and many other preparations. There is no argument against this practice."

PROF. RAUBENHEIMER:—"The retail druggist who aspires to the name of pharmacist, should most certainly make his pharmaceuticals. This practice should not be restricted to simple preparations, such as mentioned in the query, but he should also make the more complex preparations, those which require pharmaceutical skill, which every pharmacist should have acquired in his college course and also in his daily practice, if he has made use of the opportunities presented to him."

Question 12:—How much of the trouble encountered by pharmacists in making the official preparations is due to the use of crude materials of improper quality, and the subsequent improper keeping of the finished product?

DISCUSSION.

MR. NITARDY:—"In my opinion most of the trouble is caused by the use of improper crude materials rather than to improper keeping of the finished product."

PROF. RAUBENHEIMER:—"I think that the much talked-of poor quality of crude materials, of our drugs and chemicals is entirely unwarranted. The pharmacist who is willing to pay

the price for them can always obtain drugs which are of U. S. P. quality. Another important factor in the situation is that the average pharmacist seldom examines or tests the drugs he buys. As soon as he commences to do so and the wholesale druggist becomes acquainted with the fact, then the pharmacist, upon the payment of a fair price will be supplied with drugs and chemicals of U. S. P. quality."

MR. FERTÉ:—"Not much of the trouble is due to drugs of poor quality. It is caused in the majority of cases by ignorance of the *modus operandi*, I believe."

PROF. LASCOFF:—"In the manufacture of official preparations it must be understood that the materials must be of A-1 quality, and if the preparation is not a stable one, it should not be made in large quantities, and should be preserved in well-corked amber bottles and at a medium temperature. If care is not taken in the preservation of such preparations, there is always trouble."

Question 13:—Did you find it necessary to have your Pharmacopœia re-bound before it was subjected to much wear? Is the binding as substantial as it should be or does it compare favorably with the bindings of other books intended for constant use?

DISCUSSION.

PROF. LASCOFF:—"This question was brought up at a meeting recently held in the New York College of Pharmacy and Professor Remington stated that the binding of the U. S. P. (IX) would be far superior to any other binding of the previous volumes. My personal experience is that I have had mine re-bound twice, and then had to buy a new book with a flexible cover."

MR. SCHULZE:—"I think the binding of the Pharmacopœia compared favorably with that of other books, although we used it a great deal more."

MR. FERTÉ:—"We have not been obliged to have our Pharmacopœia re-bound, probably because I covered it with heavy wrapping-paper as soon as I received it. At practically no cost this covering will last two or three years and then can be renewed."

PROF. RAUBENHEIMER:—"Unlucky '13 and unlucky binding of the Pharmacopœia were united. After the short use of one year, the poor binding of our good Pharmacopœia gave way and its leaves were scattered in the many corners of my store. An interleaved and leather-bound copy was then procured at the advanced price, but its fate was the same. Of course, I admit that I make frequent daily use of the volume and could hardly expect that one copy should last ten years. But its binding can be, and undoubtedly will be, greatly improved upon. By the way, the United State Pharmacopœia is not the only one which has a poor binding. The French Codex is bound equally bad if not worse."

DR. WILBERT:—"I am informed that the Board of Trustees has made proper arrangements for a most substantial binding for the new Pharmacopœia."

MR. WHITE:—"The practice of making notes in the Pharmacopœia is not a good one. It increases the use of the volume and therefore tends to its deterioration. I use a card-index for such purposes. These cards can be renewed at any time at but very little expense, and their use saves the use of the Pharmacopœia."

Question 14:—Has the average pharmacist such reference books as he should have? Would $50.00 or $100.00, expended on books of value to pharmacists be a paying investment from a commercial stand-point? What books would you include in a five-foot shelf of reference books for the country pharmacist; for the city pharmacist?

DISCUSSION.

MR. SCHULZE:—"Every pharmacist should possess a Pharmacopœia and a National Formulary. In addition to these, he should have at hand a first-class treatise on pharmacy, and also one on chemistry. He should subscribe to at least one good drug-journal. All of these will not cost $50.00 and they will answer all practical purposes. These books, with the publications which the membership in the A. Ph. A. will bring him to keep in touch with the advance of pharmacy, are sufficient for the ordinary pharmacist."

MR. FERTÉ:—"The average pharmacist is not equipped with books as he should be. There is no need of expending more than fifty dollars for a working-library. That much, however, I consider a good investment for him."

MR. GRAY:—"I do not think the average pharmacist has as many reference books as he should have; and believe that fifty dollars for books is a good paying investment. I would recommend the following books for a five-foot library shelf: U. S. Pharmacopœia, U. S.

Dispensatory, Materia Medica and Pharmacology (Culbreth), National Formulary, Manual in Chemistry (Luff and Candy), Squire's Companion to the British Pharmacopœia, Latin Dictionary, Chemical Dictionary, Merck's Index.

PROF. RAUBENHEIMER:—"I have thoroughly investigated this question, being somewhat of a 'book-worm' myself. The conclusion I have reached is that the average library of the average pharmacist of the United States is a disgrace to the profession. Is it not sad that, even in the Empire State of New York, which pretends to be a leader in things pharmaceutical, a provision had to be made in the Pharmacy Law requiring every pharmacist to have in his pharmacy copies of the Pharmacopœia and the National Formulary? The pharmacist who invests fifty or one hundred dollars in books pertaining to pharmacy, chemistry, botany, pharmacognosy and toxicology will receive an abundant return within a very short time. I have had in mind the preparation of a list of books which should be possessed by every pharmacist, both in city and in country and hope soon to furnish such a list as is called for by the query."

PROF. LASCOFF:—"Very few pharmacists have a complete library, or even the most necessary books of reference. In my opinion, fifty dollars to one hundred dollars expended on books of value to pharmacists would be a paying investment from a commercial standpoint, as without books of reference I do not think any reputable pharmacist could get along. I would suggest the following list of books as desirable for a library. For city pharmacist: U. S. Pharmacopœia; National Formulary; U. S. Dispensatory; Hager (3 volumes); Squire's Companion to British Pharmacopœia; Text Books, (Arny's, Remington's, Caspari's); Volumetric Analysis (Coblentz & Vorisek or Schimpf); Latin Grammar; Incompatibilities in Prescriptions (Ruddiman); Weights and Measures; Outlines of Physiology; Botany and Pharmacognosy (Kraemer); Polyglotta (Rosseau); Proceedings of A. Ph. A.; Manuals of Toxicology and Microscopy; Journal American Chemical Society; Purdy's Practical Uranalysis; Journal Am. Ass. Advancement of Science; Five Pharmaceutical Journals (to be bound); Pharmacology and Therapeutics (Cushny); Materia Medica (Rusby). For country pharmacists: U. S. Pharmacopœia; National Formulary; U. S. Dispensatory; Hager (3 volumes); Incompatibilities in Prescriptions (Ruddiman); Proceedings of A. Ph. A.; Two Pharmaceutical Journals (to be bound.)"

DR. WILBERT:—"The Pharmacopœia was not much in evidence in New York State before its possession was made compulsory. Some two years ago I took it upon myself to make an investigation into this matter. I found some pharmacopœias, but they were not like those of which Mr. Jones and Prof. Raubenheimer have spoken. Those I found were in a most excellent state of preservation and they had a thick layer of dust on top of them."

MR. OSSEWARD:—"It seems strange to me that any pharmacist can get along without a pharmacopœia. We have constant use not only for the pharmacopœia of this country but also for those of Britain, France, Germany, Holland and Scandinavia." In addition to the books mentioned I would suggest one entitled "Modern Materia Medica."

MR. NITARDY:—"I have found a book entitled 'Elementary Chemistry,' by Dr. Gordeen, a very good book for a retail pharmacist to have."

PROF. RAUBENHEIMER:—"The most thorough book of which I have knowledge is Von Schmidt's Pharmaceutical Chemistry. It is printed in German and, so far as I know it has not been translated. The author of the book is an honorary member of our association."

Mr. Richardson read the following paper in reply to this query:—

DRUG-STORE LIBRARIES.

FRANK RICHARDSON, PH. G.

The average pharmacist has not the reference-books that he should have. The average drug-store library in this section is composed of the books required by the law, viz.: The United States Pharmacopœia, The National Formulary, and one of the Dispensatories, and the pharmacist without a good working-library, is like a mechanic trying to work without suitable tools.

The pharmacist in most rural communities, is looked upon as a man able to answer all sorts of questions and nothing he can do will add more to his prestige than his willingness and ability to answer satisfactorily the many questions asked by his customers, and to do this he must have the tools to work with.

In my own store I have several times the five feet mentioned in the question submitted.

I would recommend for the country pharmacist the following:—

The United States Pharmacopœia, The United States Dispensatory, Remington's Practice of Pharmacy, The Scientific American Cyclopedia of Formulas, Simon's Manual of Chemistry, Diseases of Cattle, (Department Agriculture), Scoville's Art of Compounding, Homeopathic Pharmacopœia, Gould's Medical Dictionary, The National Formulary, The National Dispensatory, The Era Formulary, Manual of Toxicology, (Brundage), Culbreth's Materia Medica, Diseases of Horses, (Department of Agriculture), Ruddiman's Incompatibles, Schimpf's Volumetric Analysis, The Modern Materia Medica.

Add to these the Legislative Manual published by the State, for reference in regard to political questions that are often referred to the pharmacist, and the World Almanac in answering general questions.

In addition to the above books every pharmacist should take an active interest in and be affiliated with his State Association, and lend his support to their efforts for the betterment of pharmacy and also the American Pharmaceutical Association and have its valuable Year Book at hand for ready reference. Last, but not least, every pharmacist who desires to keep abreast of the times, should be a subscriber and careful reader of one or more of the splendid journals devoted to pharmacy.

This list, of course, could be largely extended, but I believe that with such a library, the pharmacist would be well equipped to meet any emergency and would find the money expended in procuring it well invested.

For the city store much the same list would apply, with the exception of the books on Diseases of Horses and Cattle.

Question 15:—Do pharmacists as a rule select the right kind of boys for apprentices, considering that they are the timber from which the pharmacy of to-morrow will be built?

PHARMACISTS AND THE RIGHT KIND OF APPRENTICES.

ROBERT P. FISCHELIS, B. S., PHAR. D.

The query, "Do pharmacists as a rule select the right kind of boys for apprentices, considering that they are the timber from which pharmacy of to-morrow will be built?" requires the consideration of several existing conditions before it can be answered intelligently.

First of all, what is the modern conception of the word "apprentice," as applied to pharmacy? Is an apprentice a boy whose environment necessitates the earning of money outside of school hours, in order that he may obtain a common grammar-school education, and who finds that the corner drug-store can use him during the hours he does not spend at school, both day and night? Is an apprentice a high-school student who earns his "pin" money, or more, by afternoon or evening work in a drug-store? Or, is an apprentice a high-school graduate who selects pharmacy as his life work as other high-school graduates select medicine, law, architecture, or finance?

The grammar-school boy, first mentioned, as a rule does not get very far along in the practice of pharmacy. He is selected, not to be taught the profession, but because his labor is cheap and he is able to run errands, clean up, and relieve the proprietor and other help, of various unpleasant but necessary duties. Unless this boy is very energetic and becomes very much interested in pharmacy as a life work, because of an inherent liking of the profession as he sees it practiced, he only continues the work as long as it is a means to his particular end, earning money. Perhaps this boy may be fortunate enough to be in the employ of a druggist who realizes that it is his duty to sacrifice a small part of his time for the purpose of awakening an interest for pharmacy in this prospective, by showing and explaining to him that there is more to our profession than the mere selling of wares over the counter. But the chances of affiliation with such a "preceptor" are becoming rarer every day.

The non-graduate high-school student before mentioned, is more apt to become a druggist than either of the other two. Pharmacy usually appeals to him as a commercial proposition. He knows that it will be necessary to do some studying or perhaps take a college course before he can qualify for the work, but considers the time thus spent, a good investment. He has had one or more years of high-schooling and that will admit him to most colleges of pharmacy. The standing which a pharmacist enjoys in most communities, and the commercial prospects are the things that appeal to him and even though his natural inclinations may be toward another line of work, the higher requirements and the longer "apprenticeship" place it beyond his reach and pharmacy becomes his choice.

To be sure, many of this class, as well as of the other class named, really develop a liking for the profession of pharmacy and practice the profession for its own sake as well as for the living it earns them. But there is a difference between inherent love and acquired affection.

We come now to the high-school graduate, who through some one of several influences has acquired so great a liking for pharmacy, that he decides to make it his life work. Such young men are very desirable apprentices, but in comparison with other fields of endeavor, what prospects does pharmacy hold out to them?

The president of a state pharmaceutical association said in his address at the 1914 convention of that association, "we have become commercialized to a certain extent, and the majority of us do not have any prescription business worthy of mention."

The author of a book on commercial pharmacy makes these statements:—

"For permanent success in present-day pharmacy, you should be a good business man rather than a good prescription man.

"The biggest successes in pharmacy are the big stores in the large cities and their success is due to their knowledge and practice of business methods. They have set aside their professional scruples, and have added side line after side line, until their stores look more like department stores than pharmacies.

These statements voice the trend of pharmacy unmistakably and leave with us a fair idea of the future.

Experience is proving that few of the men who choose pharmacy because they like it, stick to the practice in retail drug-stores. The majority, finding that they

are unable to use their knowledge of the subject in the retail drug business, without at the same time doing the non-pharmaceutical work required in a modern drug-store, turn to manufacturing chemical or pharmaceutical houses, or take further courses in chemistry, bacteriology, materia medica and like subjects and thus qualify for good positions as analysts, teachers or laboratory workers.

It is my belief that there are just as many young men to-day who seek to become "professional pharmacists," as there ever were, but the commercial trend of retail pharmacy has made that business undesirable for them and they are turning in large numbers to positions with manufacturing houses, who are gradually picking up the professional side of our calling which the retailer is casting aside.

The author, whom I have already quoted, says that it pays a progressive druggist to hire a clerk at about $20 per week to take care of his prescription department, while he himself makes the side lines "go." How much time is such a man going to take to help educate apprentices and make pharmacy the profession, a worth-while calling for young men?

But perhaps the solution of the problem is nearer a consummation than appearances indicate. If those proprietors who are commercially inclined employ helpers who incline toward professionalism, and those who are professionally inclined, on the other hand, employ commercially-trained help, both ends of the business should be well taken care of and the apprentice, seeing both ends of the work of a drug-store properly taken care of is at liberty to choose between the two, when the time comes for him to assert himself. However, personal attention is necessary in either case to make the apprentice at all valuable.

That a division of drug-stores into pharmacies and shops is being given some serious consideration, is evidenced by the fact that a state pharmaceutical association at its last meeting, appointed a committee of eleven men to consider the subject and report at the next meeting. Such a condition would naturally solve the apprentice problem.

To my mind the apprentices in pharmacy to-day are not getting a fair deal from the majority of employers. Some consideration should be taken of a man's inherent abilities and preceptors should be frank in telling a boy whether or not he is fitted for the work. A frank statement of the opportunities in present-day pharmacy should also be given to the apprentice before he has gone too far into the work to be able to turn to something else more suitable for him. I would say that pharmacists as a rule do not give enough time and thought to the selection of apprentices and forget that an apprentice is an investment and that this investment, more so than any other in the store, will bring a high or low rate of interest, depending upon the amount of time the employer is willing to devote to its development.

DISCUSSION.

PROF. LASCOFF:—"Pharmacists as a rule do not select the right kind of boys for apprentices, they choose them with regard to salary and do not take into consideration their general education and other things so essential to the development of a pharmacist. In my opinion a pharmacist should be a high-school graduate before he studies Pharmacy. That is the case in European countries."

PROF. RAUBENHEIMER:—"To my great regret I am compelled to answer this query in the negative. It seems as if the apprenticeship which was so greatly valued by our fathers in Pharmacy is neglected, sadly neglected. It should be remembered above all, that besides the

necessary preliminary education, the apprentice must possess something which is still more important and that is a love for professional pharmacy. In order to create and foster such love I have found that the study of the History of Pharmacy supplies this want and have instituted such a course in the College of Pharmacy at Jersey City."

MR. FERTÉ:—"As a rule pharmacists make no selection whatever. They hire the boy whom they can drive the hardest for the least pay. No attention is paid to 'timber.'"

MR. SCHULZE:—"No deliberate selection is usually made. A boy of the lawful age is taken into the store and allowed to make his way to the sale of soda, cigars. He then gradually adds to these the sale of seidlitz powders, patent medicines and package goods. In a few years this boy with an immature mind is encouraged to take the examination for the Assistant's certificate. After a few years he takes the examination for a Pharmacist. Passing this, he with his incomplete education becomes a full-fledged pharmacist. No boy from the fifth and sixth grade or even from the seventh grade of our public schools can properly comprehend the mysteries of pharmacy and chemistry and the sooner we insist that our apprentices shall be high-school graduates the better standing will pharmacy attain in the eyes of the public."

MR. JONES:—"My experience is that a person should be careful in their selection of an apprentice if they expect to get service which is valuable. But the more enterprising and energetic young man you get, the quicker he leaves you for some larger field."

MR. NITARDY:—"If we will select an apprentice when we really want an apprentice, and hire an errand-boy when we want one, we may be able to help this problem a little. There is no use in hiring an apprentice when you merely want a bottle-washer or a window-cleaner."

MR. JONES:—"I claim that a man will not make a good proprietor unless he learns the business from the ground up."

MR. NITARDY:—"I mean that we should not hire an apprentice unless we intend to move them up. If there is no such intention we should simply hire an errand-boy or porter."

Question 16:—What plan would you suggest to make our profession more attractive to the better class of young men?

PROF. LASCOFF:—"To make our profession more attractive to the better class of young men, I would suggest that we conduct our pharmacies upon a professional basis. The pharmacists should do away with side-lines which do not belong to the profession, and if you do keep side-lines, keep your prescription-department distinct and separate from your store. Do not devote all the space in the front to side-lines, but give room for a display of crude drugs, etc. This will attract the young men more than a display of shoe-laces or parasols, which articles displayed in your store would certainly not attract any one to its study."

DR. WILBERT:—"We could probably make the business more attractive by doing a strictly professional business, a pharmacy business, and by making others do the same business. Then those who do not belong in the business will get out and leave it much to its good. If this could be accomplished the business of Pharmacy would be much more attractive to the better class of men."

MR. OSSEWARD:—"I heartily agree with Dr. Wilbert. If the pharmacists would do their duty and see also that others did theirs, the trade would benefit. When I was on a State Board we received a great many complaints from men about the way their brother pharmacists conducted their businesses, but if we asked the complainants to testify to the truth of their statements the answer would be, 'O, please don't use my name in it.' Now, the druggists should take their part of the responsibility."

MR. JONES:—"I do not agree with Dr. Lascoff in making the business more professional or in separating the pharmacy from the side-lines. Combining these more closely is to my mind the better way."

PROF. RAUBENHEIMER:—"Besides the shorter hours and more pay which are proposed I would point out the position the druggist occupies in the community as a reason to attract young men to the profession. As a profession Pharmacy is certainly the equal of Medicine as a guardian of the health and the welfare of the people. Pharmacists may well become physiological chemists and thereby rise to high positions everywhere. In considering the question of a choice of a profession with my son I had no difficulty in convincing him that Pharmacy was the most desirable profession for him to adopt for his life-work."

MR. SCHULZE:—"I think we should insist on having it understood that Pharmacy is of dual nature, that is, professional and commercial, and that there is nothing degrading in commerce, unless a man himself degrades it by dealing in immoral or illegal goods. Then we should lessen the hours of confinement, by opening our stores a little later and closing them a little earlier at night, giving more time to clerks, at least two evenings a week, with a part of each Sunday. Have them realize that Pharmacy, after all, requires no more from its followers than other professions and not as close application as Medicine, nor is it as unpleasant in many ways.

Mr. Osseward read Dr. Groat's paper on "The Chemistry of Cold Creams."

THE CHEMISTRY OF COLD CREAMS.

H. S. GROAT.

There has always been a noticeable difference between cold creams made with, and those made without, borax. Those made with borax are always whiter and fluffier, and seemingly not as greasy as the others, due to the uniting of the borax chemically with the palmate, stearate, or fatty alcohol of the hard and soft bases. This reaction only takes place when the oil solutions and the aqueous solution of borax are both heated to above 120 degrees F., as the esters or organic borates are not formed below that temperature.

When spermaceti is used as the base in the manufacture of the cold cream, borax unites chemically with cetin its chief constituent in a reaction similar to the reaction of borax and glycerin in the manufacture of boroglycerin. In a similar manner borax reacts with myricylic palmate and ricinolein, the chief constituents of white wax and castor oil respectively, when either white wax or castor oil is used as the principal base. With almond oil as a base borax acts likewise with the three main constituents of almond oil, palmitin-myricyl palmitate, olein-glyceride of oleic acid, and stearin-glyceride of stearic acid.

When glycerine and borax are heated together, the chemical result is boroglycerin, sodium meta borate and boric acid, or meta boric acid and water.

$C_3H_5(OH)_3 + Na_2B_4O_7 = (C_3H_5)BO_3 + 2NaBO_2 + H_3BO_3$

Glycerine Borax Boroglycerin Sodium metaborate Boric acid or

$(H_2O + HBO_2)$

Water Metaboric acid.

Take the following common formula for cold cream:

Petrolatum Liquidum	120
Cera Alba	40
Aqua	40
Sod. Bibor	1.4

Here we have white wax as the hard base, its chief constituent myricyl palmate, being attacked by the borax forming palmitic borate.

$3C_{16}H_{31}O.OC_{30}H_{61} + Na_2B_4O_7 + 3H_2O = (C_{16}H_{31})_3BO_3 + 2NaBO_2 +$

Myricylic Palmate Borax Water Palmitic borate Sodium metaborate

$3HO.OC_{30}H_{61} + H_3BO_3$ or $(H_2O\ HBO_2)$

Myricylic acid Boric acid or water and Metaboric acid.

Another common formula is:—

Oleum Ricini	180
Cetaceum	60
Cera Alba	15
Sodium Biborate	1.5
Oleum Rosæ.	
Oleum Amygdalæ Amaræ aa q. s.	

In this case the borax enters into three separate chemical reactions with the white wax, spermaceti, and castor oil respectively. We have given above the

reaction of borax with white wax, we shall now take up the reaction of borax with spermaceti. The chief constituent of spermaceti is cetin-cetyl palmitate—$3C_{16}H_{33}O.OC_{16}H_{31}$—which is attacked by the borax forming palmitic borate, as in the case of white wax and cetylic acid as a by-product instead of the myricylic acid, which is the by-product when white wax is used.

$3C_{16}H_{33}O.OC_{16}H_{31} + Na_2B_4O_7 + 3H_2O = (C_{16}H_{31})_3BO_3 + 2NaBO_2 +$

Cetyl palmitate Borax Water Palmitic Borate Sodium Metaborate

$3HO.OC_{16}H_{33} + H_3BO_3 — (H_2O + HBO_2)$

Cetylic Acid Boric Acid or Water and Metaboric Acid.

With the castor oil, borax combines with its chief constituent ricinolin-glycerine of ricinoleic acid, and forms glyceryl borate or boroglycerin, ricinoleic acid, sodium metaborate, and boric acid or water and metaboric acid.

$C_3H_5(C_{18}H_{33}O_3)_3 + Na_2B_4O_7 + 3H_2O = (C_3H_5)BO_3 + 2NaBO_3 +$

Ricinolein Borax Water Boroglycerin Sodium metaborate

$3HOOC_{18}H_{33}O + H_3BO_3 — (H_2O + HBO_2)$

Ricinoleic Acid and Boric Acid or Water and metaboric acid.

There is another and more popular class of cold creams, of which almond oil is the base. The extreme popularity of these creams is due to the fact that the use of almond oil as the base is a decided advantage, as it is of a purely endermatic nature, that characteristic so greatly desired in this class of toilet preparations. Of the many formulæ of this class tried out the following gives the most universal satisfaction:—

Oleum Amygdalæ Dulcis	77
Lanum	15
Paraffinum	18
Cera Alba	18
Sod. Bibor	1.5
Liq. Hydrog. Diox	1.5
Oleum Rosæ Geranium	.2
Aqua Dist	27
Oleum Rosæ	.4

With the almond oil the borax enters into a triple chemical reaction with its chief constituents, the glycerides olein, palmitin, and stearin. Glyceryl borate or boroglycerin is the resulting chemical compound formed in each case. With olein, which is a glyceride of oleic acid, the reaction is

$C_3H_5(O.OC_{18}H_{33})_3 + Na_2B_4O_7 + 3H_2O = (C_3H_5)BO_3 + 3HO.OCC_{17}H_{33}$

Olein Borax Water Boroglycerin Oleic acid

$+2NaBO_2 + H_3BO_3 — (H_2O + HBO_2)$

Sodium metaborate and boric acid or Water and metaboric acid.

With palmitin the reaction is

$C_3H_5(O.OC_{16}H_{31})_3 + Na_2B_4O_7 + 3H_2O = (C_3H_5)BO_3 + HO.OCC_{15}H_{31} +$

Palmitin Borax Water Boroglycerin Palmitic acid

$2NaBO_2 + H_3BO_3 — (H_2O + HBO_2)$

Sodium metaborate and boric acid or Water and metaboric acid.

With stearin the reaction is

$$C_3H_5(O.OC.C_{17}H_{35})_3 + Na_2B_4O_7 + 3H_2O = (C_3H_5)BO_3 + 3HO.OCC_{17}H_{35} +$$
Stearin Borax Water Boroglycerin Stearic acid

$$2NaBO_2 + H_3BO_3 - (H_2O + HBO_2)$$
Sodium metaborate and boric acid or Water and metaboric acid.

Mr. Ford read the following paper:—

RANDOM NOTES.

THOMAS D. MCELHENIE, PH. G.

Aqua Anethi:—Wishing to replenish a supply of Aqua Anethi I could find no formula except the British on Page 174, U. S. Disp., 19th Ed.—directing distillation. Not having the necessary apparatus or time, I adapted to the case the official process for most of the aromatic waters, as follows:—

R	Ol. Carui	2 cc.
	Ol. Anethi Sem	2 cc.
	Talcum	30 gm.
	Water ad	2000 cc.

Triturate and filter as usual.

The product is entirely satisfactory.

Blue Pills.—For several years my habit has been to dispense for Blue Pills over the counter five-grain Capsules of Powdered Blue Mass, and the patient gets a better thing than ready-made pills whether made by myself or a factory.

(Capsulæ Blaudii C. Arsenici et Strychnia):—The official process for the Pill of Ferrous Carbonate and the processes of the various makers who furnish the pills ready-made, do not and cannot produce a pill of *ferrous* carbonate. By the time the work is done the moisture present has changed nearly or quite all of the salt to the *ferric* salt. Pondering these things, I hit on the plan of using the essential ingredients dried, and packing speedily into capsules.

Starting with a warm mortar of good size, drop in the necessary dispensary tablets, for one grain each Arsenious Acid and Strychnia Sulphate and follow with Potass. Carb. Purif. Recentis 250 grains. Rub to fine powder and add Ferri Sulph. Exsicc. 250 grains in fine powder. Rub lightly enough to mix well and pack into No. 4 Capsules, which will hold five grains. Keep in corked bottles. These will produce *Nascent ferrous Carbonate* in the stomach at the time of disintegration. I have some of the capsules several months old unchanged.

Preparation of Herbs, etc.:—To prepare leaves or herbs for maceration or percolation moisten the material with water in a suitable basin and cover, allowing to stand over night so that the leaf is in about the natural fresh condition. Then when the worshipful mistress of Domestic Lodge No. 1 is not looking, borrow her meat chopper, sneak back to the store and in a little while you have your leaves coarsely cut. Allow them to dry and proceed with the operation.

I have prepared Jaborandi and Henna in this way and for many others it would work equally well. Our distinguished member, Mr. Ebert, years ago proposed the same little tool for granulating Opium.

Elix. Aromaticum:—Four years of continuous use of the formula of Mr. R. R.

Johnston of Bucyrus, Ohio, for this elixir only confirms my good opinion. It contains 6¼% Alcohol, and that is enough for any use I can think of. The formula was published in the Pharm. Era, May 20, 1909, P. 469. As it was not mentioned in the Report on Progress of Pharmacy for 1909 or 1910. I conclude some members may have missed it, and therefore will transcribe it here.

℞ Sp. Aurantii Co	12.	cc.
Talcum Purif	30.	gm.
Triturate thoroughly and add in portions		
Syrup	363	cc.
Add gradually in same manner		
Glycerine	93.7	cc.
Alcohol	62.5	"
Water	468.7	"
Filter through wetted filter and follow with mixture of		
Alcohol	10%	} by vol.
Glycerine	15%	
Water	75%	
to make 1000 cc.		

After two or three trials I have found it to be improved by using about 20% of Concent. Syr. Orange in place of so much Simple Syrup.

Worked out for five gallons it runs as follows:—

Sp. Aurantii Co	240 cc.	240 cc.
Talcum	600 gm.	600 grams
Syr. Orange Conc	51 fl. oz.	1452 cc.
Syrup	195 " "	5808 cc.
Glycerine	64 " "	1875 cc.
Alcohol	42 " "	1250 cc.
Water.....ad. Cong. V		qs. ad. 20,000 cc.

Lin. Camphora Benzoata:—To an educated nose a sniff at the mouth of a bottle of a perfectly normal academic and official liniment of Camphor brings to one's mind just a trace of an odor which resembles the first cousin of rancidity. I have had in mind for a long time to try benzoin for that and having occasion recently to make up 2000 cc., I added 2% of Siam Benzoin.

Following the suggestion made by Mr. Raubenheimer a few years ago I used Oleum Sesami weighing 1600 grams into a tared bottle, and dropping in 400 grams of coarsely powdered Camphor and indicating by a strip label the measure of 2000 grams, then adding 40 grams coarsely powdered Siam Benzoin and allowing to stand until wanted, when it was filtered, and furnished a fine product. Camphor dissolving more rapidly than in Ol. Gossypii.

Mr. Nitardy moved that the papers presented by authors not present be declared as read and referred for publication. Motion carried.

Mr. Osseward was then installed as Chairman of the Section and made the following address:—

"I will say to you gentlemen that I deem it an honor to be selected as Chairman, as I told one of the gentlemen who asked me about this nomination, that I had my mind made up

when I came to Detroit that I would not accept an office of any kind. He wanted to know why, and I said because I have so much business in my own State that I do not see how I can do justice to the work. I think the members of the Association should be a little more lenient with the Chairman, as it is hard work to get papers as it means a lot of worry, and if the worry was taken away it would be a pleasure. I am going to try to see if I cannot get a little assistance from the start so that a little worry can be taken off my mind, and if that can be done I think the work will be pleasure instead of a pressure, because the Chairman has to work very hard. I put out 200 invitations for papers and received three replies. I trust that some of the members will make promise of a paper. I will do everything I can to make this Section a success next year.

Mr. Osseward then introduced Mr. Becker as Secretary.

Mr. Becker spoke as follows:

I feel that a few words in defense of my position is necessary. I came here also with the intention of not taking an official connection with any of the Section. The principal reason for my not wanting to serve, was because I feel that my services are very inadequate because of the very poor results obtained from my efforts. I do not conduct successfully the section of work assigned to me. In regard to papers, I think that one plea is sufficient for a gentleman. I will try to do the best I can as Secretary.

Mr. Osseward then introduced Mr. Jones as Associate.

MR. JONES:—I do not know that I can be of any service to the officers of this Section, and I do not know what you intend that I should do, but I do consider it an honor to be appointed as Associate to such worthy gentlemen as Mr. Osseward and Mr. Becker.

MR. NITARDY:—The Associate is the apprentice and the object is that he will become acquainted with every part of the work so that when he becomes Secretary he will make an energetic, hard-working Secretary and later when he becomes Chairman, he will make a hard-working and energetic Chairman.

MR. WILBERT:—I move a hearty vote of thanks to ex-Chairman Nitardy.

Motion approved by rising vote.

Motion to adjourn. Carried.

C. OSSEWARD, Secretary.

ON THE PREPARATION OF FLAKE AGAR-AGAR.

F. W. NITARDY, PH. C.

Agar-agar has recently come into favor with the medical profession as an evacuant. Its value is based on the formation of a soft, bulky indigestible jelly in the intestines, which, it is claimed, promotes peristalsis by supplying the necessary residue frequently lacking on account of our present-day highly refined foods, and softens the feces by virtue of its water absorbing and holding power.

In its natural form agar-agar is hardly available for this purpose as the long shreds are difficult to administer. The powdered agar-agar, it is claimed, will be digested when taken. Its most desirable form for administration is therefor in flakes, in appearance quite similar to flake breakfast foods and usually prescribed to be eaten with or as such cereals.

A simple and easy method of preparation is as follows:

Soak and rinse a suitable quantity of agar-agar in water, drain well, grind through a meat-chopper and spread out in thin layers on cheese-cloth trays to dry in a dust-free airy place. When dry collect and store in suitable vessels. This product is usually prescribed in doses of one to four heaping teaspoonfuls (1 to 4 gm.).

If it is desired to medicate the agar-agar, the required amount of medicament for each 500 gm. is dissolved in water so as to form 1000 cc. of solution. This solution is mixed with the flake agar-agar and as soon as it is evenly and completely absorbed, the product is again spread out to dry.

SHORT AND SIMPLE ALCOHOLIC ASSAY METHODS.

JAMES SEYMOUR AND GEORGE MCDERMAND, M. S.

As Professor Havenhill reported so favorably his adoption and success with the "salting out" assay for alcohol, in examining Spirit of Camphor, we extended the same method to estimate alcohol in other alcoholic liquids, including vinous and spirituous liquors. We checked the results by other known alcoholic assay methods and the results seem fairly accurate. The method is quite simple and rapid, only a few minutes usually being required, and no complicated apparatus, a small cylinder graduate (or better, a slender graduated tube), being sufficient. This renders the method useful and practicable for the pharmacist.

The method consists of adding dry potassium carbonate to the sample, (5 cc. or 10 cc.) in a graduate until a little of the solid salt remains undissolved after a minute with shaking. After settling, the oily layer of alcohol is measured and read in percentages. If we have a 10 cc. sample, each cc. of alcohol reads as 10 per cent. etc.

When beer, wine or other solutions containing sugar or viscous substances is tested, it should stand a few hours, as some of the water is suspended with the alcohol and must settle out. The presence of water is shown by the layer of alcohol becoming milky when first separated.

As we have but begun the work we have but few samples to report. Two samples of beer when thus tested:—

No. 1	beer showed	8%
2	beer showed	10%
1	good whiskey showed	50%
1	bar whiskey showed	42%
1	gin showed	43%
1	wine showed	32%

These checked with known accurate assays by other methods except No. 1 beer. Ten cc. samples were taken in the above tests.

For the estimation in Spirit of Camphor, we would refer to the proceedings of the A. Ph. A. of 1907, pp. 443 and 444.

ASSAY OF TINCTURE OF IODINE.

Test to see if the solvent is official alcohol by adding a little potassium carbonate to a small portion (5 cc.) and shaking. If a lower stratum of water solution is formed it shows a deficiency of alcoholic strength. U. S. P. alcohol gives no lower liquid.

DETERMINATION OF IODINE AND ALCOHOL.

A 5 cc. sample titrated with a little less than 28 cc. of decinormal sodium thiosulphate should be decolored, (by following U. S. P. directions). This colorless solution can now be saturated with potassium carbonate to liberate the alcohol, which rises as an oily layer to the top. The percentage should show between 92 and 94% alcohol. Even with this small sample the error may be too small to vitiate the results, even with the dilution from the decinormal thiosulphate. A more concentrated solution, however, may be used if preferred.

We do not claim anything novel in this method of assay, but wish to call attention to its simplicity, accuracy and rapidity.

ARTIFICIAL PERFUMES.

H. S. GROAT.

The tendency of the present day on the part of both, the large perfume manufacturers and pharmacists who make their own perfumes, is decidedly toward the manufacture and perfection of artificial goods. The constant increase in price and consequent unreliability in quality of essential oils, has been a main factor for this change, augmented by the rapid advancement of the science of organic chemistry.

Since the active principle of many drugs is now made synthetically almost the entire world's supply of these now comes from the chemical laboratory. The active odoriferous principles of many, if not most, of the essential oils have been isolated and their identity with synthetic organic compounds firmly established. In fact, so extensively has this field been developed that now one can obtain commercially and at much lower figures, the odoriferous principle of almost every known essential oil; consequently perfumes made from these synthetic compounds are much cheaper than the natural perfumes, and in many of the cases are the equal, if not the superior, of the natural product itself.

"Artificial Perfumes" is a very exhaustive and complex subject and so closely allied with advanced organic chemistry that in this brief treatise, I can mention in a limited way only the more important of these synthetic bodies of which the artificial perfumes of the present day are merely mixtures.

VANILLIN.—Vanillin is identical with the active ingredient or chief constituent of vanilla, and is extensively used in enhancing natural extracts as well as the chief flavoring agent of artificial vanilla flavorings. Vanillin is methyl protocatechuic aldehyde—$C_6H_3(CO\,H)\ (OCH_3)_3\ (OH)_4$. It occurs in white needles and melts at 81° C. It has an intensive vanilla odor and is used extensively in confectionery, as well as in perfumery.

COUMARIN.—Coumarin is the active principle of the Tonka Bean, and is used extensively as a substitute for it in the manufacture of flavoring extracts. It is a white crystalline solid, melting at 67° C. Coumarin is the delta lactone of coumarinic acid—$C_9H_6O_2$. It is used considerably in perfume manufacture as a fixative for other odors, and is the most important synthetic compound of this class. It is the chief ingredient of *Foin Coupe,* or New Mown Hay Bouquet.

HELIOTROPIN.—Heliotropin is a synthetic compound possessing a powerful Heliotrope odor. It is a white, crystalline compound, melting at 37° C. Heliotropin is the methylene ether of Protocatechuic aldehyde—$C_6H_3(CHO)\ (O_3)\ (CH_2O_4)$. An alcoholic solution of it makes a very fine Heliotrope perfume, which can be improved by a little vanillin or coumarin for a fixative and intensifier, blended with a little bergamot, lemon or neroli oils.

AUBEPINE OR HAWTHORNE.—The concentrated odor of Hawthorne or May blossoms is represented by anisic aldehyde—$C_6H_4(OCH_3)\ (CHO)_4$. When properly diluted this makes a very pleasant perfume, which is greatly augmented by blending with a small quantity of citrus oil—orange or petitgrain.

IONONE.—Ionone is the concentrated violet odor. In the concentrated form it does not in the least resemble violets, but does when greatly diluted. The commercial product is only a 10% alcoholic solution, because of its great intensity of odor. Ten cubic centimeters of this extract when diluted with pure spirits are sufficient to produce a thousand cubic centimeters of triple extract of violets. The perfume is enhanced by the addition of a little orris oil, which acts chiefly as a fixative. The chemical formula of "Ionone" is kept a trade secret, but it is evident that the several commercial brands now on the market vary chemically; according to Tiemann, they vary from alpha, beta and gamma Irone—$C_{13}H_{20}O$—to the beta, oxime and alpha ketones of same.

ARTIFICIAL MUSK.—For many years attempts have been made to artificially imitate the odor of musk. Not however, upon the basis of any knowledge of the constitution of the natural perfume. The chemistry of natural musk—the preputial secretion of the musk deer, *Moschus Moschiferus,* is entirely unknown. The artificial musk of modern perfumery is tri-nitro-butyl toluene—a white, crystalline solid, melting at 96° C. The entire commercial supply has been manufactured under the patents of Albert Bauer until recently, when a rival manufacturing chemist successfully marketed a di-nitro-butyl xylene as an artificial musk. The odoriferous constituent of the musk does not appear until the nitrated hydrocarbon radical has been introduced into the compound. The use of musk is extensive for perfumery of a certain kind, where powerful odors are desired. It is used very extensively in the scenting of toilet soaps, the presence of alkali improving its odor as well as acting as a fixative.

ARTIFICIAL NEROLI.—At present there are two artificial neroli substances on the market: one a solid, sold under the name of "Nerolin," the other a liquid called "synthetic Neroli oil." "Nerolin" is beta napthol Methyl ether, a white crystalline compound, melting at 70° C., first introduced into commerce under the name of "Bromelia." Synthetic neroli oil is a mixture of the alcohol geraniol—$C_{10}H_{16}O$—and linolol—$C_{10}H_{18}O$—together with their acetic esters. The characteristic odor, according to Erdmann, is due to the presence of the Methyl ester of anthranillic acid. The artificial neroli oils of commerce are uneven in value, and as their exact composition is a trade secret, the only road open to the practical perfumer is to imitate the natural oil by experimental mixtures of the compounds named.

ARTIFICIAL LILAC.—Terpineol—$C_{10}H_{15}OH$—in dilute form possesses an odor almost identical to that of natural lilacs, though also suggesting elder flowers and hyacinth. Terpineol is the basis of many floral perfumes of this class. A mixture of 90% terpineol and 10% palmarose oil, yielding perfume indistinguishable from the favorite French perfume, *Muguet.* (The term *Muguet* is merely a French equivalent of Lily of the Valley.) In general, lilac extracts, or "white lilac," may be regarded as solutions of terpineol, which are slightly modified by the addition of other perfumes, generally oils of ylang ylang, geranium, sandalwood or rose, according to taste. For perfuming soaps a straight solution of 1% terpineol does very well.

ARTIFICIAL HYACINTH.—Several of the artificial oils of Hyacinth are on the market which are fairly good imitations of the natural perfume, chief among

them being chlorstyrolene and alpha bromstyrolene. Styryl alcohol—$C_9H_{10}O$—also known as cinnamyl alcohol, has a powerful odor of hyacinths, while benzyl alcohol—$C_6H_5CH_2OH$—is an aromatic body of strong hyacinth and bitter almond odor.

ARTIFICIAL LEMON OIL.—There are on the market several preparations which bear the label synthetic oil of lemon, (terpenless), and which possess a strong lemon odor. Analysis by Parry and other authorities shows that citral is the chief compound of these preparations. Citral in a diluted state has been strongly recommended as a substitute for lemon oil by the Schimmel Company, who in one of their late annual reports says, "Normal lemon oil contains, on the average, about 7½% of citral. Therefore, 75 grammes of citral would suffice as a substitute for one kilogramme of oil of lemon. As its flavor is somewhat wanting in the degree of freshness characteristic of good lemon oil, this deficiency must be neutralized by an addition of lemon oil." Therefore, citral is now generally used in combination with oil of lemon. The most approved proportion is 100 grammes of citral to 1400 grammes of oil of lemon. This is equivalent in odoriferous strength to three kilogrammes of oil of lemon. We quote farther: "Fifteen grammes of the mixture are sufficient for making one hectoliter of lemon liquor, and this remains clear, even if it contains only 30% alcohol. For making lemon syrup to be used for lemonades, 20 to 25 grammes are sufficient for 100 kilogrammes of syrup. When the use of citral is preferred without the addition of oil of lemon, the following solution deserves the preference: 75 grammes of citral and 925 grammes of alcohol (95%). This equals one kilogramme of oil of lemon in odoriferous power.

ARTIFICIAL ROSE OIL.—Although numerous "artificial" and "synthetic" rose oils are listed by various firms, there is nothing which in any way competes with the fine odor of natural otto of roses. The two best defined constituents of oil of rose are the alcohols geraniol—$C_{10}H_{17}OH$—and citronenellol—$C_{10}H_{20}O$—and these bodies with a trace of their acetic esters will produce as good an "artificial oil of roses" as may be made. A little genuine oil of roses is frequently added to make the substitute a little more passable. A compound patented by Schering, termed di-methyl-heptadinol—$C_9H_{16}O$—which possesses strong rose odor, has met with commercial success.

NIOBE OIL.—The synthetic perfume sold under this name is merely a methyl benzoate—$C_6H_5COOCH_3$—. It is a liquid having the specific gravity of 1.102, and a boiling point of 195° C.

BERGAMOIL.—This body, which is used as a substitute for bergamot oil, and which it resembles very closely, is simply linalyl acetate—$C_{10}H_{17}$ $C_2H_3O_2$.

ARTIFICIAL JASMINE OIL.—The natural jasmine perfume is due to an essential oil, but this is both exceedingly delicate and expensive. The odoriferous principle of jasmine is generally extracted in the form of a pomade. There, however, are several brands of synthetic oil of jasmine on the market, their chemical composition varying greatly. None of them are single compounds, but are mixtures of several odoriferous bodies, which together reproduce very fairly the jasmine perfume.

According to Verley (owner of the French patents for jasmine oil) a mixture

of 10% linalol and 90% phenyl-glyco-methylene-acetal makes an admirable artificial product, as these two chemical compounds are the chief constituents of the natural oil. Other authorities, Hesse and Mueler, deny the existence of phenyl-glyco-methylene-acetal in jasmine oil, or that they even give a jasmine odor. Their conclusion lead us to infer that a fine artificial product results, from a mixture of benzyl acetate, 65% ; linalyl acetate 7 to 10% ; benzyl alcohol, 6% ; linalol 16%. We infer from Parry's experiments that secondary styrolyl acetate—C_6H_5. $CH(O.COCH_3)$ CH_3—is in itself a good product. Artificial jasmine oil is made on the basis of these researches, although probably small quantities of some bodies not generally known are added by the manufacturers.

ARTIFICIAL COGNAC OIL.—Cognac oil, which is not an essential oil in the fullest sense, is prepared by distilling wine lees with seven or eight times its weight of water. Commercial "oenanthic ether" serves its purpose fully and is a product of more reliable quality than the genuine oil. It is not used so much in the manufacture of artificial perfumes as in the manufacture of brandies, chiefly for flavoring poor qualities of brandies made from corn.

Any intelligent perfumer can produce most all of the natural perfumes from the synthetic bodies of which we have spoken briefly or otherwise. Very finished products can be perfected by the proper and cautious use of the more common aromatic alcohols and esters for correctives, intensifiers and fixatives.

DETERIORATION OF GALENICALS.

E. KIMMICH, PH. G.

Many of the U. S. P. and N. F. galenical preparations deteriorate after storage for periods varying from a few weeks to several years, and this change in constitution is due to the action of light, changes in temperature, oxygen of the air, the action of living organisms, and the spontaneous breakdown which must take place sooner or later. These changes sometimes alter the physical properties of a preparation to such an extent that it seems like a different product.

Every pharmacist has had his troubles with liquid preparations containing Iron Phosphate and Pyrophosphate; he knows that when such products, (mainly elixirs) are freshly made they are usually of a light amber or pale greenish color; but on aging some turn to a darker green or brown, depending on the solvents or adjuvants used, such as the alkaline citrates, ammonium chloride or acetate, and sodium chloride.

When exposed to light for a much longer period, decomposition and precipitation takes place. While these changes are largely brought about by the action of light and temperature, the solvents and menstrua used have a great deal to do with hastening the process.

Some years ago I made several series of experiments in an effort to determine the principal cause of such changes. These experiments, consisted mostly of the group containing Iron Phosphate Sol., Iron Pyrophosphate Sol., and Tincture

Citrochloride of Iron in combination with Quinine salts, and in menstrua containing varying percentages of alcohol, glycerin, sugar and water, also with added solvents, to aid in the solution of the iron and quinine salts, such as Sodium Citrate, Potassium Citrate, Ammonium Acetate, Ammonium Chloride, and Sodium Chloride.

On exposure to diffused light for several months, and direct sunlight later, I was also able to make the following general deductions:—

(1) Citro-chloride of Iron withstood the effects of light better than the Phosphate and Pyrophosphate of Iron.

(2) The less sugar the product contained the slower the darkening in color.

(3) The varying percentages of alcohol did not seem to have much influence in the matter of discoloration.

(4) Those having Ammonium Chloride or Ammonium Acetate present darkened more quickly than those containing Potassium and Sodium Citrates and Chlorides.

(5) The presence of glycerin retards discoloration and decomposition.

(6) Prolonged exposure to direct sunlight decomposes the mixtures, probably with the formation of insoluble Ferrous Phosphate and Quinine Citrate, which is only slightly soluble.

(7) Storage in amber bottles is almost a necessity, as the changes take place very slowly if light is excluded.

When the light has decomposed the mixtures, in corked bottles, pressure is developed, due to the formation of CO_2.

Samples tested at the time for fermentation showed the liquids to be sterile, indicating that bacteria played no part in producing the changes.

In conclusion I would state that elixirs, in which a soluble green iron compound is wanted, will keep better if made with citrochloride of iron, particularly if part of the sugar is replaced with glycerin and the liquid is stored in amber bottles.

Beef, Iron and Wine, N. F. is another product that will sometimes give trouble, especially if put up in flint bottles and exposed to direct sunlight in a display window. The action of the light causes decomposition, forms a gas and possibly blows the cork. As this product contains ingredients that are liable to ferment, one naturally supposes that the product has spoiled from this cause; the real cause, however, is the action of actinic sun rays on the citrochloride of iron present. Ferric Salts in the presence of citric acid are reduced by action of sunlight, and the citric acid is decomposed, liberating CO_2.

In making this statement I do not mean to say that Beef, Iron and Wine does not ferment under certain conditions, but that we have the same factor present to cause decomposition that we have in the iron elixirs.

Most pharmacists have observed the darkening in color and change in taste of syrups containing chemicals held in solution by the aid of acids, also syrups containing acids only. In such compounds we can always look for those changes, and the more acid present the more pronounced the color and the more rapidly will the changes take place.

Syrup Hydriodic Acid is a fair illustration. The present U. S. P. syrup contains less sugar than the 1890 formula, and consequently is more stable. Samples that had stood for over ten years, made with varying amounts of sugar, glycerin and water showed the discoloration to be in direct proportion to the amount of

sugar present. One sample made with 60% glycerin and no sugar remained practically unchanged. In none of the samples was the darkening due to free iodine.

Syrup of Iron Iodide is another product requiring the greatest care in manufacturing to prevent darkening at the beginning. If the operator is fortunate enough to make the syrup without its being tinted through exposure or contamination in the process of manufacture, he will find that the syrup soon begins to discolor on aging, even if kept in flint bottles and in the light.

There is enough Hypophosphorous Acid added for the purpose of preventing discoloring to act on the sugar present and develop colored decomposition products.

Liberation of Iodine causes the least of the discoloration in Syrup Iron Iodide. It is oxidation of the Ferrous into Ferric Iron, and the formation of invert sugar and caramel from the action of the acid on the sugar.

Syrups containing Hypophosphites are another class that darken, and the trouble can usually be traced to the mineral acids present. It is a well known fact that the Hypophosphite Syrups form an excellent medium for the growth of fungus. They should be sterilized where practicable. This will retard the development of fungus growth for a long time, especially if the containers are unopened.

Cod Liver Oil Emulsions darken quite rapidly, unless properly handled. Cod Liver Oil is one of the most easily decomposed fats we have, and exposure to air for even a short time darkens the product and makes a decided change in the odor. All Cod Liver Oil Emulsions act practically the same in these respects, regardless of the emulsifying agents used. The only practical way to prevent or retard discoloration is to bottle the emulsions as soon as made in pint bottles or less so that it will be consumed by the patient before it has time to change in color, odor and taste.

Medicated Bougies and Suppositories with a gelatin base undergo changes which result in hardening of the mass and decrease in solubility. The best and most practicable method is to encase them in proper shaped metal collapsible tubes. In this way the mass is protected and remains soluble indefinitely.

DISCUSSION.

CHAIRMAN NITARDY:—I think this paper a very valuable one. It treats of a question that has not received sufficient attention among druggists.

MR. RAUBENHEIMER:—I think the subject of this paper one most interesting to every pharmacist. Preparations containing ferric salts should not be exposed to light. They should be kept in amber-colored bottles. The Formulary is very specific about that. On the other hand, ferrous salts ought to be exposed to light. Bear that distinction well in mind. The less sugar there is in these ferric preparations the longer they will keep. They should not contain any sugar. The next official formula for Elixir of Iron, Quinine and Strychnin will not contain any sugar. It will contain glycerin and mostly water. The same applies to syrup hydriodic acid. The more glycerin this preparation contains the longer it will keep. I have some in my store that I made about twenty-seven years ago and it is still white. I think it a fallacy to add hypophosphorus acid to syrup of ferrous iodid. All that is necessary with that,—and I believe that is the old German method,—is to put the syrup in a flint-glass bottle, a pint, quart or gallon bottle, and if you have much use for it put it into a five-gallon demijohn and keep it exposed to light. Drop into it an ordinary iron nail. This will much assist in its preservation.

A FORMULA FOR A NEW TYPE OF A SALINE ANTISEPTIC SOLUTION.*

CHARLES H. LA WALL, PH. M.

The number of formulas for antiseptic solutions is legion and the types into which they naturally divide themselves are numerous. They may be acid in reaction and contain about 20 per cent. of alcohol, like the official Liquor Antisepticus, or they may be of the alkaline type and contain glycerin, like the Liquor Antisepticus Alkalinus of the N. F.

For both of these types new formulas have been proposed by me and there is a third type, recently coming into prominence and attaining quite a degree of popularity, for which I would like to propose a formula also. This is a type which is slightly saline and distinctively alkaline, but which contains no glycerin and no appreciable amount of alcohol. The formula is as follows:

Sodium chloride	5	gm.
Sodium borate	5	gm.
Sodium bicarbonate	10	gm.
Oil of spearmint	1	cc.
Oil of eucalyptus	0.5	cc.
Menthol	0.1	gm.
Alcohol	5	cc.
Fluidextract of hydrastis (aqueous)	2	cc.
Water, q. s. to make	1000	cc.

Dissolve the salts in 750 cc. of water. Dissolve the oils and menthol in the alcohol. Mix the alcoholic solution of the oils with 5 gm. of magnesium carbonate and triturate gradually with the aqueous solution of the salts. Filter and add the fluidextract of hydrastis and finally add enough water through the filter to make 1000 cc.

This solution makes an excellent wash for the mouth or nose, either full strength or diluted with water, as preference indicates.

DISCUSSION.

CHAIRMAN NITARDY:—"I will ask Mr. Hall to discuss this paper."

MR. HALL:—"I regret I have not the sample which I prepared here, to show you. It is a very easy preparation to make and results in a brilliantly clear article, without a trace of opalescence. It is a delightfully fragrant preparation and taken in the mouth, either clear or diluted it makes a very pleasant mouth-wash. Of course the presence of five grams of salt in a thousand c.c. leaves just a little saline taste, that is about half of a normal salt solution. Then the golden-seal gives the preparation just a tinge of color, a very pale lemon-color, but as you see it in a pint or a quart bottle it is a preparation that is very attractive to the eye. It leaves a very pleasant taste in the mouth with that touch of salinity which makes it very palatable. Being flavored with spearmint it is very agreeable to taste."

MR. NITARDY:—"Mr. Hall's description gives us a very clear idea of the preparation, even though he has not brought the sample with him."

MR. GREY:—"I would suggest that Berberine might be used instead of aqueous hydrastis. I understand it is used in the preparation called 'Murine.'"

MR. HALL:—"It is but a small amount that is in the preparation, perhaps it is there simply for the color. There is not enough for any medicinal effect, except upon the sensitive nerves there."

* Read before Section Practical Pharmacy and Dispensing at Detroit Meeting.

PAYING MORE THAN WAGES.

E. BERGER.

The final action in selling—the contact between clerk and customer—involves the most troublesome problem in retail merchandising. All the knowledge and skill, money and energy which have gone into the assembling and arrangement of stocks, into window display, advertising and the countless details of store service count for nothing unless the sales-person sums these up and expresses them in courteous, intelligent and interested service to the buyer.

How to make sure of that interest and applied intelligence—how to get the clerk to look at each customer and try to treat each customer as the proprietor himself would, is the crowning task in retailing.

Every means that has been utilized to arouse interest, to awaken desire, to impel action, be it advertising, window display, store environment, or any of the many other factors, are all for one purpose—to bring the customer face to face with the clerk. But if that clerk is not in hearty accord with the store and its interests, if that clerk is indifferent to the store's success, what is the probable result? Approximately forty per cent. of possible sales are lost and at least fifteen per cent. of the sales that are culminated never have a "comeback," that is, the customer is not so impressed or gratified by the treatment and service received that he or she goes back to the store to buy a second time or a whole series of second times.

One way of solving the problem—according to the judgment and experience of hundreds of successful merchants—is profit-sharing.

Profit-sharing with employees not only seems to have solved this problem, but has been found to be triple-actioned in its accomplishments. In addition to its primary purpose and success in affiliating employees with a store, profit-sharing has been demonstrated to be a very influential advertising factor and of equal merit in inducing patronage.

The profit-sharing system can be divided into three classes, those who share profits based on individual sales, on department sales and on the general sales of the entire store. No doubt the largest results are obtained by the latter, however, it is doubtful that the average druggist could be induced to go into it to this extent in the beginning. Coöperation among druggists is so successful and the several National Coöperative Druggist enterprises, namely: The United Drug Company (Rexall), The American Druggists' Syndicate, and Tampa-Cuba Cigar Company,—have grown so extensively that very few progressive druggists are without the fold of at least one of these beneficial enterprises, some "live wires" have all three of these agencies, and it is on the goods manufactured and sold by these enterprises in which the druggist is financially interested and on which he himself *"shares profits"* that he has been successful in sharing profits with his clerks,—the percentage paid clerks on these department sales ranges from 2½ to 5%,—on entire store sales usually 1%. This dividend is paid on cash sales only.

I am convinced by the results that I have been shown and have personally observed that profit-sharing is the quickest, the most economical, the surest and most effective method of converting the indifferent, thoughtless employee to a keenly interested, active co-partner in the business.

A NEW ANTIDOTE FOR CORROSIVE SUBLIMATE POISONING.

WILLIAM A. HALL, PH. B.

With the publicity attending a fatal case of corrosive sublimate poisoning of a Southern banker a few months ago and as usually obtains, following the detailed description of such events in the daily press, a marked increase in the use of that poison for suicidal purposes, the thought must have occurred to many, how best to divert the public attention from this poison and what is an effective antidote.

It is not for us to discuss the *surgical* methods used in a few cases *after* the poison has entered the circulation, but what can be done at the outset in the way of mechanical relief by means of the stomach pump and emesis, the administration of albumen and mucilages or oils to retard the absorption in the stomach and intestines.

These general points will all occur to the good practitioner but he wants something else on which he can rely as an antidote. Studying over these matters, about a year ago, an idea came to me that by using one of the general alkaloidal reagents in reverse manner, we could solve the problem.

Obviously whatever was tried, should be safe in itself, and not make a bad matter worse, and also the employment of medicines beneficial in themselves, even if they failed in attaining the special object desired.

With such limitations I settled on the well-known *Mayers' Reagent* which as you all know, is a solution of *Mercuric Potassium Iodide* a general precipitant of the alkaloids. Selecting *Quinine* as the alkaloid to harness, I considered if we could administer the requisite potassium iodide and quinine in solution, after emptying the stomach, we could fill out *Mayers'* formula and the result would be (Mercuric Chloride—Potassium Iodide—Quinine Salt) insoluble in the acid gastric juice, and, as will be shown later, insoluble in the dilute alkaline intestinal liquids as certainly as we can tell from bottle reactions. While all my work was done in *Grammes*, the results, excepting Mayers' formula itself are given in *Grains*—the more popular term.

Mayers' reagent N1—20 is

Mercuric Chloride	6.775 grammes
Potassium Iodide	25.000 grammes

Distilled water to make 1 Litre.

(You will notice the $HgCl_2$ to KI is about 1 to 3.75)

1 cc. Mayers' reagent N1—20 =.006775 Mercuric Chloride, .025 Potassium Iodide, and precipitates (approx) .0056 Quinine, gravimetric factor for alkaloid (average, *Lyons*) .311.

It is stated by authorities (U. S. D.) that Mayers' solution is HgI_2+2KI but on the basis of his proportions it would seem to be HgI_2+4KI.

$$\overset{271}{HgCl_2}+6\overset{996}{KI}=HgI_2+2KCl+4KI$$

271 : 996. :: 6.775 : X=24.9
6.775 : 25. :: 2 : X= 7.38
6.775 : 24.9 :: 2 : X= 7.35

and the formula seems to provide a slight excess of potassium iodide

$$HgCl_2+4KI=HgI_2+2KI+2KCl$$

$$+ \qquad +$$

$$HgI_2+2KI+QCl\text{-}2aq=HgI_2\text{-}KI\text{-}QI+KCl$$

corresponding to

MODIFIED MAYERS'.

Mercuric Chloride .....2. grains
Potass. Iodide .....4.9 grains
Quin. Muriat .....4. grains (2.91)

Slower in precipitating the quinine, than Mayers' which in *grains* would call for

MAYER.

Mercuric Chloride .....2. grains
Potass. Iodide .....7.5 grains
Quin. Muriat .....4. grains (2.91)

The filtrates in both cases were free from mercury (H_2S or K_2S). The *modified* Mayer filtrate showed very *slight* test for iodine (HNO_3+chloroform). Filtrate from *Mayer* tested a little stronger but still slight.

In both equations however, there is no appreciable solvent action of the potassium iodide in solution on the precipitate which in Mayers' was 6.64 grains

Modified Mayers' 4.00 grains.

Choosing quinine hydrochlorate because of its solubility, the following formula was constructed:

Mercuric Chloride .....2 grains
Dissolved in H_2O .....2 ounces
Potassium Iodide .....7.5 grains
Quinine hydrochlorate (large excess) .....20 grains
Hydrochloric acid 10% .....55 minims
Dissolved in H_2O .....4 ounces

Mix the two solutions which you observe contain acid to make the whole 2/10 of 1% and filter after two hours on a tared filter. Wash and dry to constant weight on the water bath.

Weight dried precipitate .....6.64 grains
Duplicate .....6.625 grains

To determine if a small excess of potassium iodide in presence of quinine muriate has an appreciable solvent action on the precipitate trial was made using

Mercuric Chloride .....1 grain
Potassium Iodide .....7.5 grain
Quinine Muriate .....4 grain

Net weight of precipitate dried on water bath to constant weight

.210 gramme=3.24 grains

which is practically the same proportion and answers the question in the negative.

Filtrate evaporated to dryness in tared dish on water bath 16.4 grains. Using

the gravimetric factor .311 (Lyons) for the *Alkaloid* and calculating the salt from that, the p. p. 6.64 grains=originally 2.54 Qcl.

Residue from filtrate		16.4 grains
Deduct KCl (1 mol.)	.553 grains	
Deduct KI (excess)	.15 grains	.703 grains
		15.697 grains
Add water of crystallization.		1.57 grains

20.—17.267=2.733 grains

Two grains Mercuric Chloride then in acid solution was precipitated as an in-

soluble mass by (2.54 grs. QHCl+7.5 grs.) Potass. Iodide in aqueous solution.

Calculated from residue of filtrate.....2.733 grs.
Theoretically from above formula.....2.91 grs.

Gm. .200 of the alkaloidal precipitate was rubbed up with 250 cc. 2/10 of 1% Na_2CO_3 solution, shaken vigorously at frequent intervals for several hours, filtered and residue on tared filter evaporated to dryness on water bath.

Weight of residue .....Gm. .180

showing the maximum solvent action of the dilute alkali to have been 20 m. g. or less than 1/3 grain. As some of the Mercuric Antiseptic tablets on the market contain 1/3 of citric acid the action of that acid was considered, in presence of mercuric chloride on albumen solutions and also on the antidote described in this paper.

With the *antidote* no hindrance, but rather a more complete precipitation was noted.

With *albumen* solutions the following reactions were observed:

SOLUTION OF ALBUMEN is precipitated by $HgCl_2$ but this is prevented if an appreciable amount of citric acid is previously added to the mercury solution.

Mercuric Chloride+HCl (1%) is precipitated by albumen, insoluble in excess of HCl and practically insoluble in citric acid (large excess.)

Mercuric Chloride+Citric Acid is *not* precipitated by *albumen* except in rather large excess, but on further addition of dilute HCl (1%) a copious precipitate occurs. In case you have added a large excess of albumen there is no mercuric salt in the filtrate (H_2S.)

ALBUMEN (in excess) acidulated with 1% HCl remains clear; but on further addition of 1% Mercuric Chloride solution a heavy precipitate falls. The filtrate shows a faint yellow coloration with H_2S but no p. p. even on standing.

MERCURIC CHLORIDE (1%)+H Cl (1%)=No p. p. On further addition of albumen a heavy precipitate unchanged by adding H Cl in excess.

MERCURIC CHLORIDE+ALBUMEN in excess a light precipitate partially soluble *at first* in H Cl but precipitating again shortly.

MERCURIC CHLORIDE +CITRIC ACID is not precipitated at first, but by adding ALBUMEN in large excess a precipitate falls and on further addition of H Cl a copious precipitate falls. No *mercury* in filtrate.

To sum up:—Remove the stomach contents as thoroughly as possible, give plenty white of eggs and remove in the best way, wash out the stomach thoroughly,

then for every two (2) grains of Mercuric Chloride supposed to have been taken, administer the following:

Potassium Iodide	7.35	grains
Quinine Hydrochlorate	4.	grains
Dissolved in water	4	ounces

For 10 grains Mercuric Chloride:

Potassium Iodide	36.75	grains
Quinine Hydrochlorate	20.00	grains
Distilled Water	4	ounces
Hydrochloric Acid (10%)	m. 45	

It forms a precipitate with the Mercuric Chloride, insoluble in dilute acids or alkali carbonates (.2%). While investigating these reactions I found another equation using 4.9 grains potassium iodide would work, but the precipitation is not so rapid or complete, nor does the precipitate separate as quickly, *an important point.*

A solution could be kept on hand ready for use of the formula above, with the addition of H Cl to make it 2/10 of 1%.

The study and analyses of the subject are somewhat intricate and perplexing, especially as to the composition of the precipitate with Mayers' reagent but the results for our purpose seem clear, well defined and simple. The well known chemicals, Quinine Muriate and Potassium Iodide are obtainable at any good drug store and with the proportions given, good results may be expected in accordance with my tests. A notable *excess* of the *iodide* is to be *avoided,* an excess of quinine does no harm but the proportions given should be followed.

It is to be hoped that these suggestions of the writer will be tried physiologically, and medical men use the results given in this paper to help solve a serious problem.

PYORRHŒA CURED BY EMETINE.

It is stated that an amœba has been found in the mouth lesions of subjects suffering from pyorrhœa; Barrett and Smith, of Philadelphia, consider this to be the cause of the disease. The local application of emetine hydrochloride solution is stated to have successfully cured the disease. Bass and Johns, of New Orleans, have confirmed the presence of this amœboid organism in cases of pyorrhœa, which is named *Entamœba buccalis.* They also find that emetine hydrochloride has a valuable curative action, and prescribe it in the form of hypodermic injections into the arm, in half-grain doses, at first once daily for three successive days, then every fourth day, finally every seventh day, until the gums have healed and the teeth again become firm. Local application of the solution should be made simultaneously.—*Nat. Drugg.,* 1914, 44, 522.

General Session

REPORT OF THE COMMITTEE ON POST OFFICE REGULATIONS FOR THE MAILING OF POISONS.

The appointment of this committee is due to a decision rendered in the United States District Court for the District of Missouri to the effect that the Post Office regulation prohibiting the mailing of poisons or poisonous medicines to others than licensed physicians, surgeons and pharmacists was illegal in that it restricted postal privileges to particular classes of individuals.

The present postal law, which was passed March 4, 1909, deals with the subject of poisons, inflammable materials, dangerous articles, intoxicating liquors, etc., in Section 472, as follows:—

SECTION 472. All kinds of poisons, and all articles and compositions containing poison, and all poisonous animals, insects, and reptiles, and explosives of all kinds, and inflammable materials and infernal machines, and mechanical, chemical or other devices or compositions which may ignite or explode, and all disease germs or scabs, and all other natural or artificial articles, compositions or materials of whatever kind which may kill, or in anywise hurt, harm or injure another, or damage, deface, or otherwise injure the mails or other property, whether sealed as first-class matter or not, are hereby declared to be non-mailable matter, and shall not be conveyed in the mails or delivered from any post office, or station thereof, nor by any letter carriers; but the Postmaster General may permit the transmission in the mails, under such rules and regulations as he shall prescribe as to preparation and packing, of any articles hereinbefore described which are not outwardly or of their own force dangerous or injurious to life, health, or property: Provided, That all spirituous, vinous, malted, fermented, or other intoxicating liquors of any kind are hereby declared to be non-mailable and shall not be deposited in or carried through the mails. Whoever shall knowingly deposit or cause to be deposited for mailing or delivery, or shall knowingly cause to be delivered by mail according to the directions thereon, or at any place at which it is directed to be delivered by the person to whom it is addressed, anything declared by this section to be non-mailable, unless in accordance with the rules and regulations hereby authorized to be prescribed by the Postmaster General, shall be fined not more than one thousand dollars, or imprisoned not more than two years, or both; and whoever shall knowingly deposit or cause to be deposited for mailing or delivery, or shall knowingly cause to be delivered by mail according to the direction thereon, or at any place to which it is directed to be delivered by the person to whom it is addressed, anything declared by this section to be non-mailable, whether transmitted in accordance with the rules and regulations authorized to be prescribed by the Postmaster General or not, with the design, intent, or purpose to kill, or in anywise hurt, harm, or injure another, or damage, deface, or otherwise injure the mails or other property, shall be fined not more than five thousand dollars, or imprisoned not more than ten years, or both.

In elucidation of this law the following regulation was promulgated by the Postmaster General:—

4. Medicines composed in part or wholly of poison or poisons, and anesthetic agents, which are not outwardly or of their own force dangerous or injurious to

life, health, or property, and not in themselves unmailable (see Sections 480 and 497), may be admitted to the mails for transmission in the domestic mails from the manufacturer thereof or dealer therein to licensed physicians, surgeons, pharmacists and dentists, and not otherwise, when inclosed in packages in conformity with the conditions prescribed in Section 496: Provided, That the package bears the label or superscription of the manufacturer of or dealer in the article mailed.

In view of the decision in the case above cited the Postmaster General issued a regulation to take the place of paragraph 4 above, the new paragraph reading as follows:—

4. Medicines and anesthetic agents, which are not outwardly or of their own force dangerous or injurious to life, health, or property, and not in themselves unmailable (see Sections 454 and 480), may be admitted to the mails for transmission in the domestic mails when inclosed in packages in conformity with the conditions prescribed in Section 474: Provided, That the terms "medicines" and "anesthetic agents" shall not be construed to mean poisons. Provided further, That the article mailed bears the label or superscription of the manufacturer thereof, or dealer therein, or of the licensed physician, surgeon, dentist, or veterinarian preparing or prescribing the same.

It will be observed that the revised regulation makes no distinction regarding the purchaser, leaving the purchase open to anyone. The question of what does and what does not constitute a poison in the meaning of the act is not defined either in the act or in the regulation, and when anyone proposes to mail an article the postal authorities decline to make a ruling as to what is meant by the word "poison," leaving the mailer to exercise his own judgment in the construction of the law, and, of course, to take the consequences of any errors of judgment which he may make.

This leaves the matter in a very unsatisfactory condition from the point of view of the legitimate drug trade, members of which are frequently requested to mail medicines containing poisons under circumstances which might possibly render them liable to punishment. In fact, a branch manager of one of our largest pharmaceutical houses was arrested in February of this year on the charge of illegal use of the mails in having shipped 100 heroin tablets by mail to a wholesale dealer in another city. Fortunately, however, this case was not pressed for trial, the charge being dismissed. The matter has been the subject of discussion by the Post Office authorities ever since your committee was appointed and various drafts of regulations have been submitted to the authorities both by members of your committee, by the members of the Drug Trade Conference, by the Drug Trade Section of the New York Board of Trade and Transportation, and others.

POSTAL REGULATIONS.

Proposed Amendment—Section 472, Par. 4.

4. Poisonous substances used for sanitary or medicinal purposes or in the arts and sciences which are not outwardly or of their own force dangerous or injurious to life, health, or property, and not in themselves unmailable (see Sections 454 and 480), may be admitted to the mails for transmission in the domestic mails when inclosed in containers made of metal, wood, papier-mache, or similar material, in such manner as to render impossible the escape of any of the contents: Provided, That the article mailed bears the label or superscription of the manufacturer thereof, or dealer therein, or of the licensed physician, dentist or veterinarian preparing or prescribing the same, and that there be written or

printed on such label and on the outside wrapper of the package the word "Poison" in plain letters in red ink, and also that the name and address of the sender shall appear on the outside wrapper of the package: Provided further, That no preparation of cocaine, its salts or derivatives, or any preparation containing any of them, or any preparation of coca leaves, shall be admitted to the mails: Provided further, That no preparation containing more than one of the following substances in the amount stated, viz.: two grains of opium or its equivalent of an opium preparation, one-fourth of a grain of morphine, one-fourth of a grain of heroin, one grain of codeine, or any salt or derivative of any of them in one fluidounce, or, if a solid or semi-solid preparation, in one avoirdupois ounce, shall be admitted to the mails.

While the proposed regulation is more liberal than the one now in force, it is still open to some objection, both on the ground of inconsistency and of unnecessary hardship. In discussing the matter the Drug Trade Section of the New York Board of Trade and Transportation suggested the use of the following wording:

Medicinal preparations which contain poison in sufficient quantity and form, in combination with other ingredients, to be used exclusively as a curative or remedial substance, and which are not dangerous or injurious to life, safety, health or property, may be admitted to the mails for transmission in the domestic mails when inclosed in packages, in conformity with the conditions prescribed in Section 474; provided, that the article mailed bears the label or superscription of the manufacturer thereof, or dealer therein, or of the licensed physician, pharmacist, dentist or veterinarian preparing or prescribing the same.

The proposed regulation by the authorities is open to the objection that it would restrict the mailing of solid and semi-solid preparations to one ounce, practically regardless of the proportion of poison contained. A small tablet of Brown mixture, containing 3/100 of a grain of opium to the tablet, 274 of which are required to make an avoirdupois ounce, could not be mailed because an ounce contains over eight grains of opium. There are many other preparations which could be barred on the same ground. One suggested substitute for the last clause seems to cover this phase of the dose unit in dry form, at least from the manufacturer's standpoint. This reads as follows:

Provided further, That no preparation containing any one of the following substances in more than the amount stated, viz.: two grains of opium, or its equivalent of an opium preparation, one-fourth of a grain of morphine, one-fourth of a grain of heroin, one grain of codeine or any salt or derivative of any of them in one fluid ounce; or, if in the form of a medicinal tablet, pill or other dosage unit, in twelve such units; or if a solid or semi-solid preparation not in dosage units, in one avoirdupois ounce, shall be admitted to the mails.

It is a matter of gratification to note the attitude which has been taken by the postal authorities in this matter, whose willingness to confer with the drug trade gives us reason to hope that through such conference regulations may be devised which will fill all the varied requirements in the case.

Your committee holds that in construing this law it is highly important to take into consideration the object of the measure as a guide to the probable intent of Congress in passing the law. A consideration of the law of 1909 as a whole conveys the impression that the primary object of Section 472 is to protect the mails and those handling them from possible damage. It is true that the clause relating to intoxicating liquors does not square with this theory as to the object of the law, but the presence of such a regulation is easily understood when we take into consideration the effect which the use of the post office might exert in a nullification of local option laws. If we are right in the assumption that the primary

object of the law is to prevent possible injury to the mails or to those handling the mails it will be seen that the term "poison" should be construed as including only those articles or preparations which are liable to poison persons who handle them. Such a restriction of the term would exclude the large majority of medicaments which consist of or contain substances which are poisonous if taken internally in considerable quantities. The latest information which your committee is able to present is contained in the following letter addressed to the Chairman by the Second Assistant Postmaster General:—

"The receipt is acknowledged of your communication of the 5th instant, concerning the sending of poisons and articles and compositions containing poisons through the mails.

"The Department now has under consideration the question of the advisability of promulgating a regulation admitting these articles to domestic mails. If such a regulation shall be issued I will be pleased to forward a copy to you. Until a final conclusion in the matter is reached this office is not in a position to state the attitude of the Department in the matter."

It will be seen from this letter that the post office authorities themselves are not wholly pleased with the regulations as they now stand, and it will only be a matter of time when new regulations will be issued.

There has apparently been a disposition shown in some quarters to use the postal regulations as a means of suppressing the traffic in habit-forming drugs, though there seems to be no warrant for such a construction of the law. The passage of the Harrison antinarcotic bill, which will probably occur soon, will, fortunately, take care of this traffic in a satisfactory manner and do away with the need for burdening the postal authorities with a duty which is apparently not contemplated in the postal law.

We believe that the work of this committee and of other representatives of the drug trade has been of some use in enabling the Postmaster General to arrive at a clearer understanding of the subject. In view of the fact that matter has been taken up by the Drug Trade Conference and that the members of your committee have already laid their views before the department, we respectfully suggest that the committee be discharged.

REPORT OF THE COMMITTEE ON PHARMACEUTICAL NOMENCLATURE.

In view of the disruption of communication incident to the European war the International Pharmaceutical Conference which was to have been held in Berne, on August 8, has been indefinitely postponed. Under existing circumstances we cannot hope for any international coöperation in our efforts to minimize the danger arising from the duplication of names. We can, however, urge all manufacturers of pharmaceutical preparations to exercise the utmost caution in naming new products so as to reduce as much as possible the danger from that cause. The use of certain prefixes has grown to such an extent that even the most tenacious memory can hardly keep track of the preparations bearing them. Among these prefixes are: bio-, eu-, fer-, farm-, glyco-, hæma-, hæmo-, leci-, radio-, thio-, thymo-, uro-, uri-, val-, etc.

But aside from these names, which have merely one syllable in common, there are a vast number of new remedies being launched every year the proprietors of which do not seem to take the trouble to avoid exact duplication of names. We not only have identical names for wholly dissimilar preparations, but also have a number of names which resemble each other so closely either in sound or spelling that confusion is very apt to occur. Below we give a list of some striking instances of this character:—

Absorbine,	(1) a mercurial salve.
	(2) an embrocation consisting of ethereal oils and alcohols.
Acetal,	(1) a hypnotic remedy.
	(2) a liniment for headache.
Amol,	(1) an embrocation.
	(2) a moth preventative.
Borol,	(1) an antiseptic.
	(2) a cough syrup.
Cascarin,	(1) the active principle of cascara sagrada.
Cascarine,	(2) are pills made by Leprince, Paris.
Cascarino,	(3) a tea for the treatment of obesity.
Citrol,	(1) a laxative.
	(2) a photographic developer.
Dormol,	(1) a cathartic.
Dormal,	(2) a hypnotic.
Dormiol,	(1) a preservative for wood.
	(2) a hypnotic.
Energin,	(1) a chocolate preparation of Cod liver oil.
	(2) an albuminous nutriment.
Gallin,	(1) a remedy against gallstones.
	(2) a serum against cholera of fowl.
Guaiaform,	(1) a condensation product of guaiacol and formaldehyd.
	(2) a syrup containing guaiacol-sulphonate and bromoform.
Kreosal,	(1) an internal remedy.
Kreosol,	(2) an external application.
Lactal,	(1) a solution of aluminum lactate.
Lactol,	(2) an intestinal antiseptic.
Monol,	(1) a disinfectant for drinking water.
	(2) a photographic developer.
Navigo,	(1) a meat extract.
Navigol,	(2) a remedy for seasickness.
Nephretin,	(1)
Nephritin,	(2) two subrenal preparations of different origin.
Ozonur,	(1) a serum.
	(2) a nervine.
	(3) a dentrifice.
Salacetol,	(1) a remedy in intestinal disorders.
Salactol,	(2) an injection against diphtheria.
Sulfosol,	(1) a remedy in syphilis.
Sulfosot,	(2) a remedy in tuberculosis.

In view of the conditions which are likely to obtain in Europe for the next year your committee deems it improbable that any international coöperation can be obtained in any direction and therefore respectfully requests that your committee be discharged.

REPORT OF THE COMMITTEE ON EDITING RULES.

Your committee begs leave to make a *pro forma* report of progress and to request that the committee be discharged. It seems to be impossible to devise general rules of editing which will be accepted throughout pharmacy save as to nomenclature, and in this direction the decisions of the committee on revisions furnish a guide not only for the nomenclature of pharmacopœial preparations, but also as a guide for other names by analogy. Respectfully,

CASWELL A. MAYO, Chairman.

ANTISEPTICS IN WAR.

Wounds should receive efficient disinfectant treatment as soon as possible after their infliction, and they should not be treated only by the application of an antiseptic dressing. The double cyanide of zinc and mercury in powder form is useless on the field, where wind and rain prevent it from reaching the wounds. When made into a paste, however, with 1 in 20 carbolic acid (presumably in water) it has been used with complete success. The wounds, says the author, healed beneath a mixture of paste and blood clots, and were beautiful to see. The dye with which the powder is stained acts as a mordant, and by it the chemicals are more firmly fixed in the tissues. This paste can be kept in collapsible tubes without deterioration; in fact, some which has been kept in this way since the South African War remains of the same consistence to-day, while the metal of the tubes has not been affected by the contained chemical. Regret is expressed at the fact that our troops are being supplied with iodine solution as a disinfectant. Many wounds, says the author, has arrived in this country in a disgraceful condition after the early application of iodine, and he thinks that the substance has proved a failure in treating large wounds. A better solution than iodine is a mixture of 1 in 20 carbolic acid and 1 in 500 mercury perchloride in absolute alcohol, colored with rosaline. The carbolic acid is a solvent of fat as well as a germicide; mercuric chloride is a most powerful germicide, while the rosaline, acting as a mordant, fixes the mercuric chloride for weeks after application of the solution. The alcohol encourages penetration of the antiseptic, and does not macerate the tissues like water. The liquid has been applied frequently and freely to large granulating wounds without ill effects. This would be better for the soldier to carry than iodine. It is absolutely non-irritating, and can be safely applied to the scrotum, eyelid, and other parts liable to show the results of irritants. Hydrogen peroxide as a constant application to wounds is objected to on the ground that the granulation tissue under its influence becomes anæmic and swollen, though it may have its uses in removing blood clot and sloughs.—G. L. Cheade, C.V.O., C.B., F.R.C. S. (*Brit. Med. Journ.*, December 12, 1914, 1,006).

Scientific Section

Papers Presented at the Sixty-Second Annual Convention

THE PHARMACOGNOSY OF THE MEDICINAL RHAMNUS BARKS.

E. N. GATHERCOAL, PH. G.

(Continued from page 75.)

THE PLANT CHARACTERS.

All of the RHAMNUS plants that have been mentioned, are shrubs or small trees, though some are inclined to be procumbent. They have simple, mostly alternate, petioled leaves, usually thin, bright green and glossy, at least on the upper surface, and rather prominently veined. The flowers are small, axillary, usually in small clusters and greenish. The parts of the flower are in fours or fives, though the petals may be absent and the ovary is but one. The flowers are sometimes diœcious, and upon this character these RHAMNUS species seem to fall into two classes, possessing, also, other distinct botanical characteristics, which extend even to the bark and thus cause the bark-drugs derived from the plants to form two rather distinct classes.

In the first division are *Rhamnus catharticus, Rhamnus tinctorius* (*chlorophorus*) and *Rhamnus croceus.* These are characterized, for instance, by being rather small shrubs, thorny, with leaves not over 2 or 3 inches long, the flowers diœcious and the parts in fours, the bark thin, the cork purple or blackish in color, the bast bundles very prominent and loose on the inner surface of the dried bark and the bark free from stone cells.

The other group of these RHAMNI includes the species *purshiana, californica, caroliniana* and *wightii.* These plants are tree-like or large shrubs, non-thorny, with leaves more than 2 or 3 inches long, the flowers perfect and the parts in fives, the bark mostly rather thick, the cork red-brown in color, the inner surface of the dried bark nearly smooth and the bark containing many groups of stone cells.

It is to be noted that *Rhamnus frangula,* included in neither group, corresponds in its botanical features with the second group, but its bark characteristics are like those of group one.

Rhamnus catharticus:—A spreading shrub, 6 to 10 feet high, though rarely up to 20 feet high, the ends of the twigs usually forming into stout spines. Leaves are up to 2½ inches long, but mostly less than 2 inches, broadly ovate or elliptical, rather acute at apex and obtuse at base, finely serrate, smooth and of thin texture. The veins are prominent on under surface, the laterals, 3 or 4 pairs, inclined to branch from lower half of midrib. The flowers are diœcious, 3 or 4 in an axil, on peduncles, the calyx-tube with 4 small teeth, the 4 petals narrow and scale-like.

The fruit is globose, lobed by 4 delicate longitudinal grooves, with 3 or 4 seeds, each deeply grooved.

Rhamnus tinctorius (*chlorophorus*) :—The following is Decaisne's description: Twigs, cylindrical, ash gray, terminating in spines and scattered short hairs; leaves 3 to 5 cm. long, 2 to 3 cm. wide, alternate-opposite, short petiolate, ovate, acuminate, base cuneate, denticulate, glabrous above, pubescent beneath, nerves of leaf depressed on upper surface, prominent on lower surface; stipules linear, stiff hair-like, membraneous; flowers (male) in twos or fours in the axils; calyx tube infundibuliform, cut into lanceolate, reflex, barely pubescent pieces; petals obovate, membranaceous; stamens not quite equal in height; ovary abortive; style divided, obtuse; berries small nuts obovoid or rounded, slightly furrowed below, shiny.

Rhamnus croceus:—Is shrubby, low and branching with spiny twigs and yellow wood. Leaves ½ inch long, roundish-obovate, toothed, coriaceous, evergreen, nearly glabrous, when dry bright yellow-brown beneath. Flowers on short pedicels, 2 to 6 in the axils, dicœcious, apetalous, sepal teeth and stamens four, ovary one, 2-celled; fruit yellowish, greenish and, when ripe, red, small obovate, usually, by abortion, 1-seeded; seed with a longitudinal furrow on one side.

Rhamnus purshiana:—Usually tree-like, averaging 15 to 20 feet high, but sometimes attaining a height of 40 feet with a trunk 18 inches in diameter. Leaves up to 7 inches long, broadly elliptic, apex obtuse, finely serrate, very thin, somewhat pubescent beneath and with prominent, evenly-spaced straight lateral veins. The flowers are in axillary clusters, the parts in fives. The fruit is 3-lobed and 3-seeded.

Rhamnus californica:—Shrubby, sometimes procumbent, again tree-like. It averages 15 feet high, though attaining a maximum of 30 feet. Leaves up to 3 or 4 inches long, oblong or obovate, obtuse apex, entire or finely serrate, rather thick, glabrous above, usually pubescent beneath. The flowers and fruit are like those of *Rhamnus purshiana*, though the fruit is usually 2-seeded.

Rhamnus caroliniana:—A shrub or small tree, with broadly elliptic leaves, 2 to 6 inches long, 1 to 2½ inches wide, acute obscurely serrate, smooth, slightly pubescent on the veins beneath. Flowers in axillary, peduncled umbels or occasionally solitary, the parts in fives. Fruit is globular, smooth, sweet, 3-seeded.

Rhamnus wightii:—A shrub or small tree 9 to 12 feet high. The leaves are 3 to 5 inches long, 1 to 2 inches wide, elliptical or ovate, sharply acute, finely serrate,

(Detail of cut on succeeding page.)

RHAMNUS PURSHIANA BARK.

Fig. 1.—Transverse section from just below terminal bud. A—outer bark, B—middle bark, C—inner bark. 1—epidermis with curved trichomes; 2—phellogenic layer (cork does not develop until the middle of first summer); 3—outer parenchyma developing into collenchyma; 4—inner parenchyma containing schizogenic mucilage sacs; 6—lining cells compressed and with living contents; 7—intercellular space filled with mucilage; 8—rosette aggregate of calcium oxalate (these are abundant in the parenchyma of the middle bark); 9—outer layer of angular, elongated cells, the developing primary bast; 10—primary phloem; 11—medullary ray of the bark; 12—developing cambium. (X 600, reduced ½.)

Fig. 2.—Longitudinal radial section from just below the terminal bud. Letters and numbers as under Fig. 1. The pores in the walls of the parenchyma cells and the lining cells of the mucilage sacs are very evident. (X 600, reduced ½.)

Figs. 3 and 3a.—Two mucilage sacs from the pith just below terminal bud. The lining cells are but slightly compressed, have no pores evident in the wall and contain living contents. (X 600, reduced ½.)

Fig. 4.—Transverse section of outer bark from a 4-year-old stem. 1—epidermis with a thick cuticle; 2—cork with brownish wall; 3—phellogen; 4—parenchyma of middle bark. (X 600, reduced ½.)

Fig. 5.—Transverse section of inner bark from a 4-year-old stem. 1—secondary bast with crystal fibers; 2—medullary ray; 3—phloem; 4—cambium. (X 600, reduced ½.)

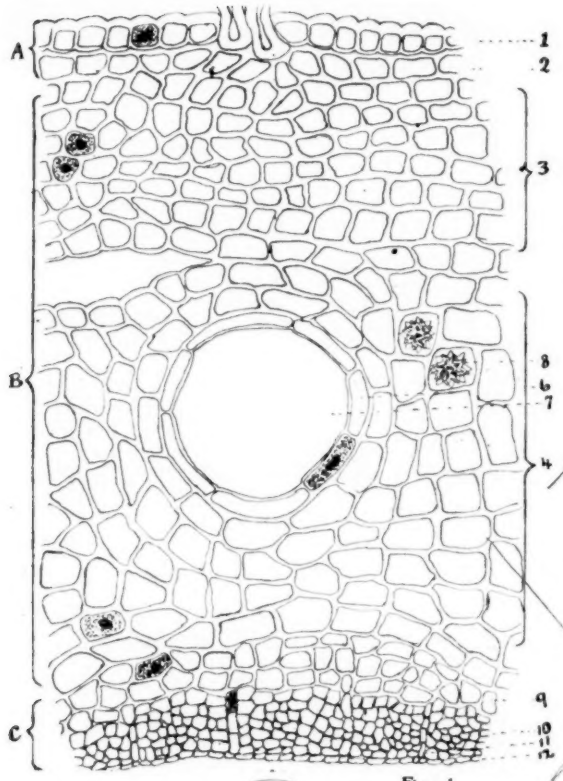

Fig. 1

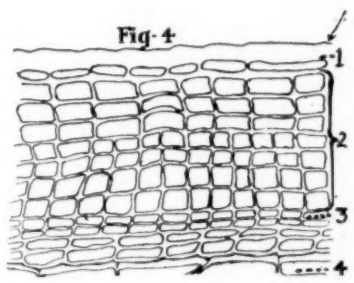

Fig. 4

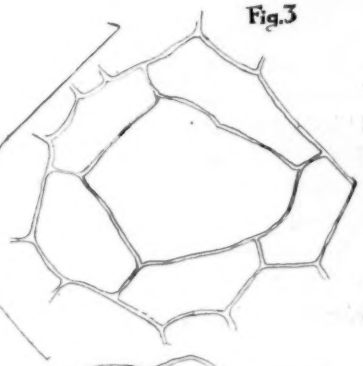

Fig. 3

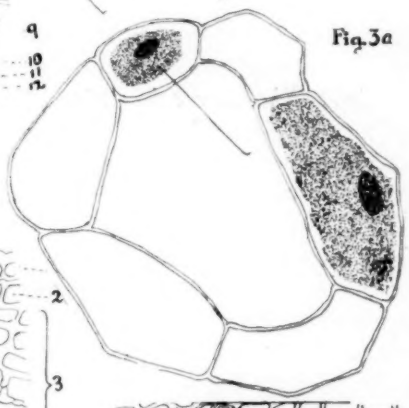

Fig. 3a

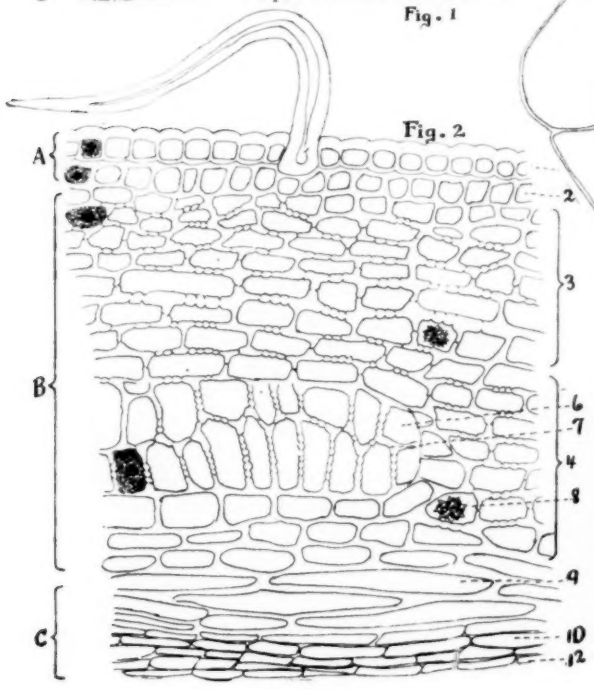

Fig. 2

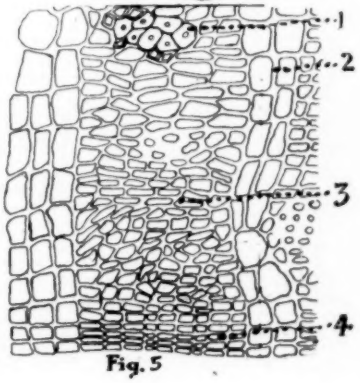

Fig. 5

smooth. Flowers are greenish-white, in axillary clusters, calyx 5-toothed, petals 5, stamens 5, stigmas 3. Fruit ovoid, 3-seeded.

Rhamnus frangula:—A spreading shrub, non-thorny, 6 to 15 feet or at the extreme 20 feet high. Leaves 1 to 3 inches long, broadly oval or ovate, obtuse, entire, smooth above, somewhat pubescent below. The veins are prominent on the lower surface, the laterals numerous, straight and coming off at regular intervals along the midrib. Flowers, from May to September are perfect, small, whitish, 2 or 3 in each axil, the parts in fives. Fruit green, then red and when fully ripe blackish, is globular, the size of a large currant, smooth, though with 2 or sometimes 3 slight longitudinal grooves and usually 2-seeded.

EXTERNAL APPEARANCE OF THE DRUG.

It is to be noted that the bark from any tree or shrub usually presents wide differences in appearance, according to the age of the stem from which it is taken. This fact holds true of the bark-drugs derived from the RHAMNI under consideration and, though in the collection of the bark for the commercial drug, some effort is made to keep the article fairly uniform in appearance yet an admixture of bark from older and younger stems is common.

These RHAMNUS barks fall into the same groups as were noted under the botanical description of the plants. Thus the barks from *Rhamnus catharticus, Rhamnus tinctorius* (*chlorophorus*), *Rhamnus croceus* and *Rhamnus frangula* fall into one division, characterized particularly by the relative thinness of the bark, the fibrous fracture and tough, stringy bast bundles and the absence of stone cells from the middle bark. In the other group comprising the barks of *Rhamnus purshiana, Rhamnus californica, Rhamnus caroliniana* and *Rhamnus wightii* the barks are thicker, slightly fibrous in fracture with little external evidence of bast bundles and possess many stone cells.

All of these barks have some features in common. Thus, they all occur in quills and curved pieces, the thinner barks from the young stems being more inclined to quill and the thicker bark remaining in more or less curved pieces. On all of these barks, lenticels occur after the stem is one or two years old, but these may be more or less obliterated by the increased growth of cork or be covered by lichens which are present to a more or less extent. The color of the inner surface of the barks darkens with age. When freshly gathered, this color is usually a cream or very light-brown, but upon drying and aging may change to a dark seal-brown or almost black. The odor is slight, the taste rather mildly bitter, acrid and astringent.

Rhamnus frangula Bark:—(The description is made from various lots of the commercial drug purchased from drug dealers.)

In single or double quills, very seldom in curved pieces, up to .5 M. in length and 3 cm. in diameter, often crushed and flattened. The bark is seldom more than 1 mm. thick, though it may reach 2 mm. in thickness. The outer surface is a dark greenish- or brownish-purple, sometimes almost black, modified by grayish lenticels and lichens. The lenticels, usually abundant, regularly arranged and conspicuous, are transversely elongated up to 5 mm. and of a light gray or grayish-brown color. The lichens are whitish, fairly abundant, but rather inconspicuous. Some longitudinal wrinkles may be present. On bark from the older

stems, there may be considerable roughened, fissured brownish cork. The inner surface is marked by fine striations and occasionally loosened bast and varies in color from a light cinnamon to a dark seal-brown. It fractures easily, rather abruptly and unevenly and shows projecting fibers, fine and short in young bark, sometimes longer and coarser in older bark but in this feature frangula bark differs markedly from the other members of this group. Odor slight, taste mildly bitter, astringent and acrid.

Rhamnus catharticus Bark:—(From samples received from Professor William Mansfield of New York, the Missouri Botanical Gardens of St. Louis, and from shrubs in the South Parks of Chicago and in the author's gardens in Oak Park.)

In quills and curved pieces up to .5 M. in length and 2 cm. in width, the bark up to 2 mm. in thickness. The outer surface is black, sometimes with a brownish tinge and with occasional grayish lichens. The lenticels are rather few, small, rounded or somewhat elongated transversely, irregularly scattered and very dark-brown or almost black in color. On pieces from older stems the cork is transversely cracked and inclined to peel transversely in thin flakes. The inner surface is marked by fine striations and by many loosened bast strands so that it often appears very hairy. The color is of various shades of brown, the bast bundles nearly white. Odor is slightly aromatic, the taste bitter and acrid. It fractures easily and evenly except for the projecting bast bundles which may form a fine white "brush" an inch in length.

Rhamnus chlorophorus (tinctorius) Bark:—(From a specimen exhibited in a collection of rare drugs at the World's Columbian Exposition in 1893.)

Long, narrow, curved strips, often with some wood attached, the bark seldom more than 2 mm. in thickness. The external color is more inclined to purple than red, but modified by grayish lichens, red-brown transverse lenticels, rough, blackish cork, etc. The inner surface is like that of *Rhamnus catharticus* bark but more exaggerated. The base color of the inner surface is very dark brown, with the numerous light yellow bast strands easily breaking away and projecting as long threads. Upon fracturing, the inner bark becomes lamellated and the bast strands easily separate from the other tissues. The odor and taste correspond to those of the other Rhamnus barks.

Rhamnus croceus Bark:—(From specimens in the College Museum and received from Mr. Theodore Payne of Los Angeles, Calif.)

In thin quills and curved pieces, up to 3 or 4 mm. thick. Outer surface grayish to dark-brown with a marked red tinge where the outer layers are scraped away. The lichens are abundant, whitish and grayish and some bear brownish apothecia. Lenticels are inconspicuous. The inner surface is dark-brown with more or less light-yellow longitudinal lines or loose projecting bast strands. The fracture is short and even in the outer layers but exposing numerous short projecting bast bundles in the inner layer. The inner bark flakes off rather easily, exposing layer after layer of these tough interlacing strands of bast. The odor is slight but distinctly aromatic and the taste slightly bitter and rather pungent.

Rhamnus carniolica Bark:—(From a specimen received from Professor Henry Kraemer, Philadelphia.)

In quills or curved strips, the bark 1 to 3 mm. thick. The outer surface is dark

red-brown modified by many grayish lichens and numerous, rather obscure, irregular, light-brown lenticels, 1 to 2 mm. long. Some longitudinal wrinkles may be seen. The inner surface is grayish to dark-brown and striate. The fracture is short-fibrous, the fibers projecting .5 to 1 cm. from the inner bark. Odor slight; taste bitter and astringent.

Rhamnus purshiana Bark:—Commercial Cascara bark is seldom in quills, usually in pieces more or less curved or nearly flat, 5 to 10 cm. long and proportionately quite broad. The bark is seldom less than 1 mm. thick, usually 2 or 3 mm., but up to even 8 mm. thick. The basic color of the outer surface is red-brown but it is often so completely covered with dense whitish lichens that small pieces may be entirely white or grayish. Lenticels are present, transversely elongated and light brown, but, where the lichens are abundant, are inconspicuous. The lichens often show black or brownish apothecia. Adhering mosses are occasionally found and on the thicker pieces roughly fissured cork is present. The inner surface is finely striate and varies from a light yellow-brown to a dark- or purplish-brown. The fracture is quite abrupt, fairly even, though fine projecting fibers can be seen on the fractured surface. It has only a slight odor but a distinctly bitter, acrid and disagreeable taste.

Rhamnus californica Bark:—(Samples from Dr. Albert Schneider of San Francisco, and Mr. Theodore Payne of Los Angeles, California.)

In quills, curved and flat pieces, the bark rather thinner than Cascara bark. The natural color of the outer surface is a dull grayish red-brown exhibiting rather numerous but small and inconspicuous light-brown lenticels. Most of the bark is covered with grayish lichens, evenly distributed. These are often roughened and dull, rather than silvery as on cascara. The black apothecia are numerous. The inner portion of the cork is a bright reddish-brown. The inner surface of the bark varies from a light to a dark brown and is smooth or finely striate. The fracture, odor and taste are as those of Cascara bark.

Rhamnus wightii Bark:—(Specimens from O. A. Farwell, Detroit.)

In single quills or curved pieces of varying thickness, color and markings, according to the age of the stem from which it is collected. From young stems the bark is seldom more than 1 mm. thick, of a brown color, more or less covered with grayish lichens, or reddish brown where the outer layer is scraped off so as to

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RHAMNUS PURSHIANA BARK.

Fig. 6.—Mature mucilage sac from a transverse section 15 mm. below terminal bud. The lining cells (1) elongated tangentially and compressed radially (to the mucilage sac), with walls slightly lignified, with pores and of about the same thickness as the surrounding parenchyma cell-walls (2). (X 600, reduced ½.)

Fig. 7.—As in Fig. 6, except that the drawing is from a longitudinal section and is of a portion of one side of a wide mucilage sac. (X 600, reduced ½.)

Fig. 8.—Transverse section 30 cm. below terminal bud. 1—mature cork cells; 2—phellogen; 3—collenchyma. (X 600, reduced ½.)

Fig. 9.—Transverse section 30 cm. below terminal bud. 1—collenchyma; 2—group of stone cells with very distinct pores and stratifications developing from parenchyma of the middle bark; 3—prismatic crystals, single or in group, formed in connection with the group of developing stone-cells; 4—parenchyma cells of the middle bark; 5—large rosette aggregate of calcium oxalate crystals; 6—small group of unlignified primary bast. (X 600, reduced ½.)

Fig. 10.—Transverse section 30 cm. below terminal bud. 1—parenchyma of middle bark; 2—medullary ray; 3—phloem; 4—sieve tube showing sieve plate; 5—companion cell; 6—small group of secondary bast; 7—two crystal fibers in connection with the secondary bast; 8—small rosette aggregate of calcium oxalate crystals; 9—cambium. (X 600, reduced ½.)

Fig. 11.—Longitudinal section 30 cm. below terminal bud cut radially through phloem. 2—phloem parenchyma; 3—immature secondary bast; 4—immature crystal fibers; 5—row of rosette aggregates separated by septa (the whole row formed from one cambium cell). (X 600, reduced ½.)

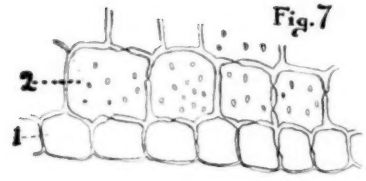


Fig. 7

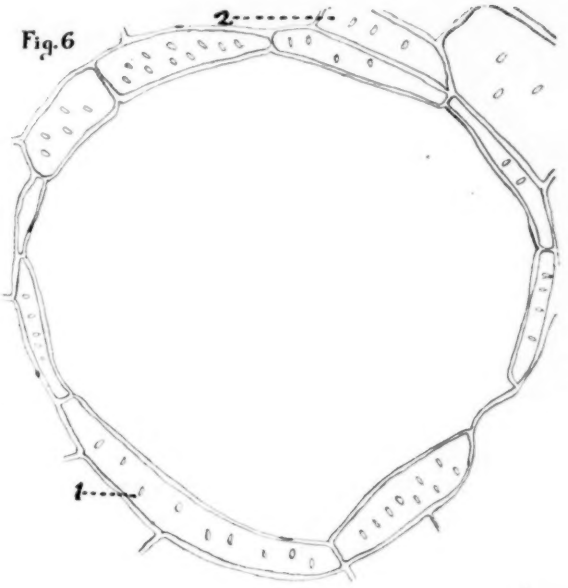


Fig. 6

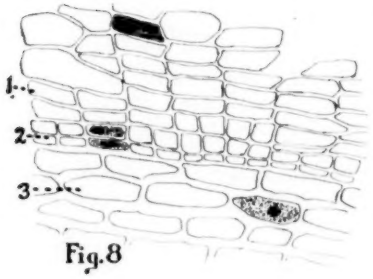


Fig. 8

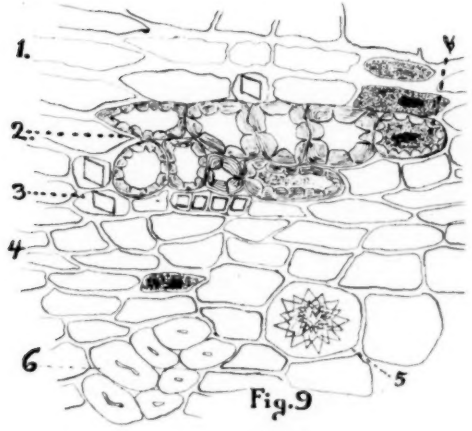


Fig. 9

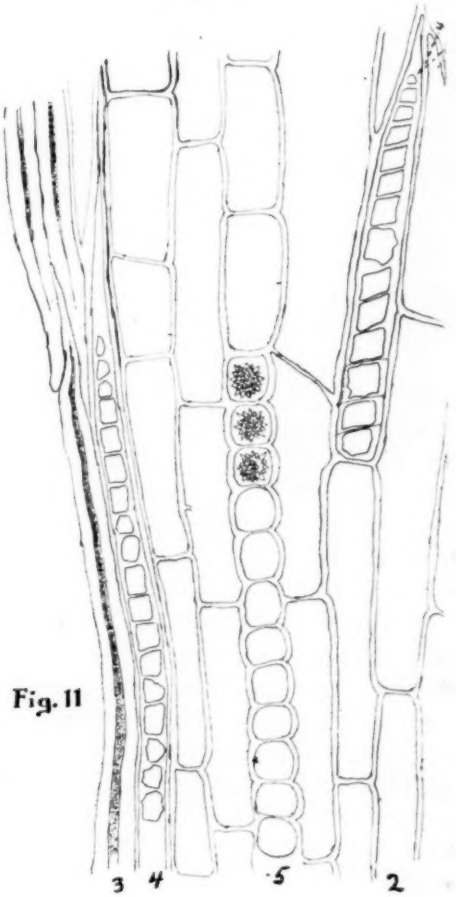
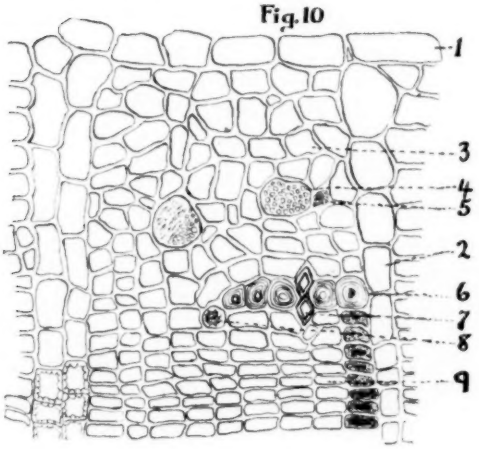


Fig. 11

Fig. 10



expose the middle layer. Older bark is 2 or 3 mm. in thickness with grayish or whitish lichens and numerous corky lenticels. Bark from old stems is thicker and more or less rugged from numerous, deep, transverse or irregular cracks in the cork and of a dark brown color. The inner surface is dark brown, the color deepening with exposure in air to almost black. The fracture of the outer portion is short but of the inner layer fibrous and tough. It has a slightly aromatic odor and a somewhat astringent, bitter taste.

HISTOLOGY OF THE DRUGS.

The RHAMNUS barks present, histologically, many common features. They each exhibit an outer bark of cork tissue, a middle bark of parenchyma tissue bearing chlorophyll and an inner bark containing in addition to the phloem strands and medullary rays, strands of bast.

The chief histological distinction between these barks lies in the presence or absence of stone cells in the middle bark, and this distinction forms the same groups that have already been twice mentioned; viz: one group embracing the bark from the species *catharticus, tinctorius* (*chlorophorus*), *croceus* and *frangula* in which stone cells are absent and the group including the barks from the species *purshiana, californica, caroliniana* and *wightii* in which stone cells are present.

Rhamnus purshiana bark has been selected for the type-study and its structure is described in detail. The descriptions of the other barks bring out especially the points of distinction from Cascara bark.

Rhamnus purshiana Bark:—The fresh material used for these sections is from shrubs supplied by the U. S. Dept. of Agriculture and grown in Oak Park, Ill., and from specimens sent from the Missouri Botanical Gardens at St. Louis, Mo.

In a transverse section, cut from just beneath the terminal bud, from a stem collected in late fall, the bark measures about 0.4 mm. in thickness on each side of the stem, which was about 2 mm. in diameter. It is easily differentiated into an outer, middle and inner bark.

The outer bark (Figs. 1 and 2) consists of a row of epidermal cells, 15 to 20 microns in diameter, nearly cubical (square in both transverse and longitudinal sections), with thin inner and side walls and an outer wall thickened to 5 microns and cutinized. The lumen is filled with dark-brown contents. The epidermis bears many curved, pointed, unicellular trichomes up to 20 microns in thickness and 2 mm. long. Their walls are cutinized and form about two-thirds the diameter at the base of the trichome. The trichomes are even more abundant on the scales of the bud.

The middle bark (Figs. 1 and 2) consists of an outer layer of parenchyma cells somewhat elongated tangentially, with cytoplasm and nucleus and somewhat thickened, pored, cellulose walls. Then follows typical rounded parenchyma cells surrounding numerous tubular mucilage-sacs, the largest of which are 0.2 mm. across. The lumen of these sacs is bordered by thin-walled cells elongated tangentially (to the sac) and compressed radially (Fig. 1). These cells are, in fact, nearly cylindrical, for their diameter longitudinally (Fig. 2) is usually no greater than the radial diameter. These mucilage-sacs are apparently of schizogenic origin.

A study of the pith, where these secretion-sacs are also abundant, affords still further support of the view that these sacs are of schizogenic origin. Thus, as shown in Fig. 3, there are five cells, broad and thin-walled, with living contents surrounding an intercellular space containing mucilage. Fig. 3*a* represents a more mature secretion sac and shows the lining cells somewhat compressed but yet with living contents and thin, non-porous cellulose walls. Fig. 6 indicates a mature secretion-vessel from the pith in transverse section. It is 180 microns across, bordered by cylindrical cells elongated tangentially (to the vessel) to a maximum length of 135 microns, a width radially of 10 to 20 microns and a depth (as seen in Fig. 7), nearly the same. These cells possess simple, oval pores connecting one cell with another and with the adjoining pith parenchyma. In Fig. 7, a view of one side of one of these secretion-sacs in the pith cut longitudinally 10 mm. below the terminal bud, the secretion-cells show the wall facing the lumen of the vessel to be very thin and without pores, but the walls adjacent to the pith parenchyma to be thicker and to possess pores. The walls of both secretion- and parenchyma-cells are slightly lignified. The maximum length of these secretion-sacs is 0.7 mm., but in all observed, the ends were not bordered with secretion-cells, indicating possibly that the vessels were curved and longer than above stated. The mucilage stains with methylene blue, as does that of Althaea and Ulmus and in sections cut and kept in a small amount of water the fluid becomes quite sticky and stringy. The mucilage-sacs, both in the bark and pith, are present in abundance only for a short distance from the terminal bud. They are abundant in the bark, however, for a distance of several mm. about each lateral bud. Evidently the mucilage is stored for the use of the buds in their early spring development.

A few rosette aggregates of calcium oxalate (Figs. 1 and 9), 15 to 45 microns in diameter are found in the middle bark as also in the pith in this section.

The inner bark (Figs. 1 and 2) contains an almost continuous outer layer of cells, rounded, and from 5 to 10 microns wide, in transverse sections, but already elongated and with overlapping, pointed ends in longitudinal section. Their walls are of cellulose, somewhat thickened and they contain cytoplasm and nucleus. This is the developing primary bast. The inner layer of the inner bark is the primary phloem consisting of very small thin-walled cells with living contents. Sieve-tubes cannot be differentiated. The cambium is beginning to form. The wood circle, while very narrow, yet contains many xylem masses rather evenly spaced with two or three or several rows of parenchyma between them. Each mass contains from 1 to 10 very small spiral tracheal tubes.

In a transverse section cut from the stem, 2 mm. below the terminal bud, it was observed that the outer wall of the epidermis was much thickened, up to 10 microns thick; that the mucilage-sacs of the middle bark were somewhat larger, the lining cells being more compressed radially and elongated tangentially; that the primary bast cells had somewhat thickened their walls and were becoming angular in shape; that the cambium was well formed, had added several tracheal tubes to each xylem mass and had increased the amount of phloem. Large rosette aggregates were very abundant in middle bark and pith. The formation of crystals in the secondary phloem was also noted. Medullary rays between the xylem masses and extending into the phloem were easily differentiated.

In sections cut from the same stem, 15 mm. below the terminal bud, it was noted that the outer wall of the epidermis had further thickened and was now fully 15 microns wide. The mucilage-sacs were few. The outer parenchyma of the middle bark had very much thickened its cell walls with cellulose, in fact resembled collenchyma. Primary bast had further thickened its walls which still remain cellulose. The cambium had developed much xylem, the wood circle being now 2.5 mm. in thickness. The medullary rays were distinct, filled with starch, the grains being 4 to 6 microns wide.

At 20 cm. from the terminal bud the first development of cork was noted, otherwise the stem showed little change except a large growth of wood. At about 25 cm. from the bud the first lignified secondary bast was seen and at 30 cm. the formation of stone cells from parenchyma cells of the middle bark had begun.

A description of sections of the stem at 30 cm. from the terminal bud is as follows:—

Total diameter of stem 7 mm., of which the bark is 0.6 mm. on each side.

The outer bark (Fig. 8) consists of six rows of cork cells from 15 to 30 microns tangentially, 10 to 15 microns radially and the same longitudinally. In transverse and longitudinal sections they are 4-sided and arranged in radial rows. The walls are thin, suberized and brownish in color. Some of the cells appear to be filled with a homogenous brown mass.

Middle bark (Fig. 9). The outer collenchyma has undergone no change. Its cells are from 15 to 45 microns tangentially, 10 to 15 microns radially and 30 to 60 microns longitudinally. Their walls of cellulose are from 3 to 8 microns in thickness; the contents are cytoplasm and nucleus and dark brown in color. The inner layer of the middle bark consists of parenchyma 15 to 30 microns tangentially and longitudinally, 10 to 15 microns radially, the cellulose walls 3 or 4 microns in thickness with elongated oval or angular pores. The contents are similar to those of the collenchyma. Mucilage-sacs, except near lateral buds, are practically absent.

The stone cells develop from the parenchyma of the middle bark apparently by a thickening and lignification of the walls. No characteristics in any of the parenchyma cells could be found to indicate they would become stone cells until the first sign of lignification occurred. In Fig. 9, *b* indicates a cell with walls no thicker than the adjoining parenchyma cells, but it shows pores more plainly and it has begun to lignify. Usually but one or two parenchyma cells at a spot show

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(Detail of cut on succeeding page.)

RHAMNUS PURSHIANA BARK.

Fig. 12.—Longitudinal section of phloem showing development of a row of calcium oxalate rosettes separated by delicate septa. (X 600, reduced ½.)

Fig. 15.—Tangential section through phloem of bark 1.5 mm. thick from a 5-year-old stem. 1—phloem parenchyma; 2—one fiber of a bast bundle; 3—crystal fibers with prismatic crystals separated by septa; 4—medullary ray. (X 600, reduced ½.)

Fig. 16.—Transverse section from bark 5 mm. thick. A group of bast fibers associated with stone cells and crystal cells. 1—bast fiber; 2—stone cell; 3—crystal cell; 4—parenchyma cell of phloem. (X 600, reduced ½.)

Fig. 17.—Stone cells from the powder.

Fig. 18.—Cork in surface view from the powder.

Fig. 19.—Phloem parenchyma containing starch from the powder.

Fig. 20.—Phloem parenchyma with sieve tube and a radial view of a medullary ray (from the powder).

Fig. 21.—Phloem parenchyma with medullary rays in tangential view (from the powder).

Fig. 22.—The end of a mass of bast. 1—bast fibers; 2—crystal fibers; 3—crystal fiber inside view.

Figs. 17 to 22, inclusive, are X 600, reduced ½.

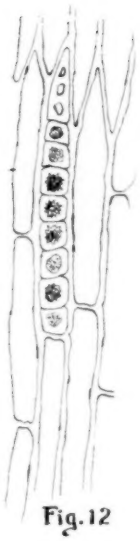
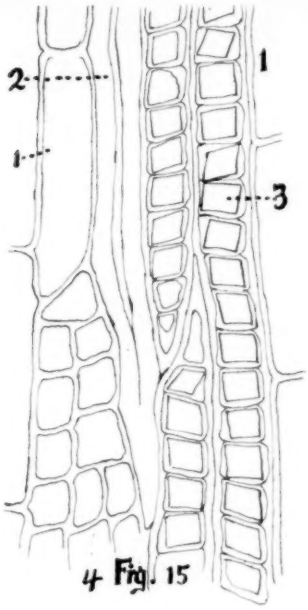


Fig. 12



4 Fig. 15

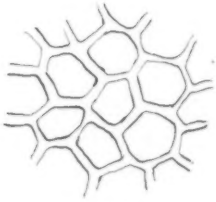
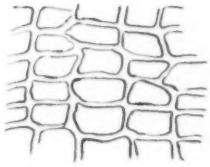


Fig. 18



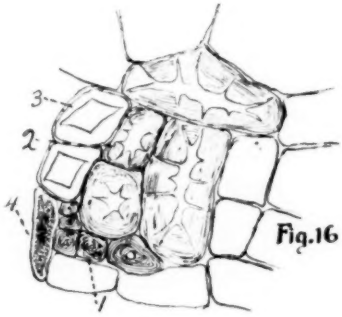


Fig. 16

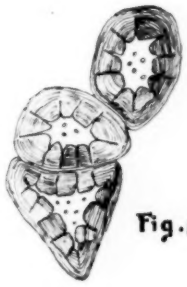


Fig. 17

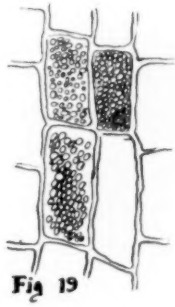


Fig 19

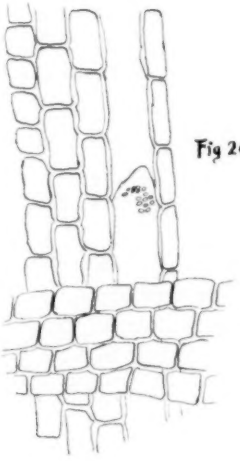


Fig 20

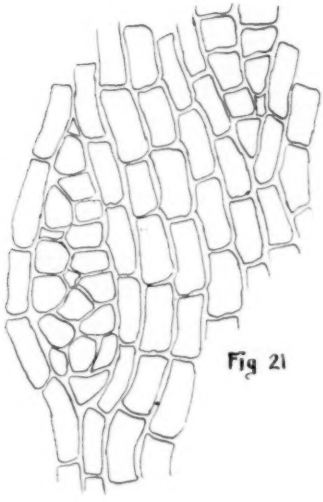


Fig 21

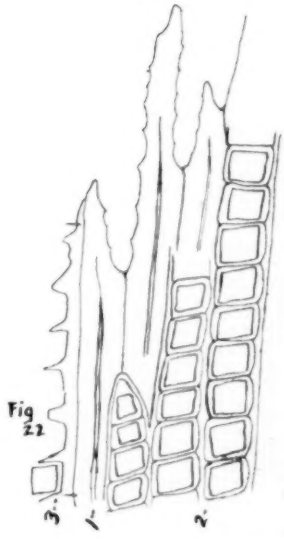


Fig 22

these first signs of change but neighboring cells follow until they form a group of stone cells varying in size but usually not larger than 4 cells radially, 20 cells tangentially and 10 cells longitudinally. The first section showing stone cells contained but the one small group, but the number of groups rapidly increased from this point on.

There are formed at this time in some of the parenchyma cells adjoining the stone cell group, small prismatic crystals of calcium oxalate, seldom exceeding 15 microns in greatest diameter and usually not more than 8 or 10 microns. One or more of the crystals may occur in a cell. If more than one occur, they are separated by a delicate septum or septa of cellulose. The slight enlargement of the parenchyma cells, when forming into stone cells, tends to compress the surrounding parenchyma and causes the stone cells to be angular or irregular in shape. Usually their greatest diameter is tangentially and seldom exceeds 60 microns. They mostly are from 30 to 45 microns, some as small as 15 microns in diameter. The walls are thickened sometimes almost to the extinguishment of the lumen (Fig. 14), again the lumen may occupy one-third the total diameter (Figs. 16 and 17). Pores are prominent and stratifications may be distinguished.

Inner bark (Fig. 10). This is still very narrow, hardly more than 100 microns wide. The primary bast (Fig. 9), in small scattered bundles, the fibers with thick cellulose walls, may be seen at the outer edge of the inner bark. The phloem presents nothing new.

The secondary bast, first observed about 5 cm. higher up in the stem, is now seen to be present in small bundles of 2 to 24 fibers, 30 bundles in a single row being present in this transverse section. The bast fibers seldom exceed 15 microns in diameter, nor more than 0.8 mm. in length. They are circular or somewhat angular in transverse section and in longitudinal view fiber-like with slenderly tapering ends (Fig. 11). The lumen is seldom more than one-fifth the total diameter. The walls are partially lignified, the cell contents nearly gone.

Crystal fibers are found adjacent to the bast bundles (Fig. 11). One bundle of bast in transverse section containing 13 bast fibers had adjacent to it 13 crystal fibers, another bundle of 8 bast fibers had 8 crystal fibers about it, another of 6 bast fibers had 4 crystal fibers, another of 8 bast fibers had 2 crystal fibers, one of 16 bast fibers had 9 crystal fibers about it and one of 16 bast fibers had 16 crystal fibers. It could not be established that the number of crystal fibers corresponds with the number of bast fibers in the bundle, though according to my observations the crystal fibers never exceed in number the bast fibers. While sometimes there is but one tangential row of bast fibers in a bundle, they often are arranged in 2 or 3 or even 4 rows. The crystal fibers, though sometimes 15 to 20 microns in width, are usually less than that. They average almost the same width as do the bast fibers. While it is usually difficult to obtain their length, yet in two or three instances they were clearly shown to exceed 300 microns in length and they probably closely approximate the bast fibers in length. They are inclined to be angular in transverse section, usually 4-sided, and fiber-shape longitudinally, with pointed ends, though often not so pointed as the bast fibers. The walls are thin, about the same as the surrounding phloem cells, 1 to 2 microns thick. The

crystals they contain are mostly prisms of calcium oxalate arranged in a single row occupying nearly the width and length of the lumen. They are largest and best-formed at the middle of the fiber and become smaller and more irregular toward the ends, where they are very small. In some fibers rosettes are associated with the prismatic crystals. The number of crystals in a fiber is often 30 or 40. The crystals are rhombohedrons, each of the six faces being nearly equal in size and shape, the acute angles being of about 60 degrees. Their diameter seldom exceeds 15 microns, the smallest being about 5 microns. In the more mature fibers the crystals are separated by septa of cellulose. These septa form with the development of the fiber and the formation of the crystals, but are difficult to distinguish until after the fiber matures. Then the wall adjacent to the bast and the side walls, as also the septa, become lignified. The outer wall was never found to be lignified, but in older bark or in the powdered drug was often broken away, leaving the lignified septa projecting from the inner thickened lignified wall (Fig. 22).

The phloem also contains longitudinal rows of rosette aggregates of calcium oxalate (Fig. 11), though these usually are not adjacent to the bundles of bast. These crystals are apparently produced in the elongated cells of the cambium, 3 or 4 to 20 or 30 crystals in a cell, but from the time crystals begin to form delicate septa begin to show between them (Fig. 12). With the enlargement of the cell and of the crystals and the increased thickness of the septa, the whole takes on the appearance of a row of rounded parenchyma cells each containing a rosette aggregate (Fig. 11). Crystals of any kind were not observed in the medullary rays, but their cells are filled with starch.

The cambium of 4 or 5 rows is well defined. The average width of the cambium cells radially was 8 microns, tangentially 15 microns, longitudinally 60 microns. The medullary-ray cambium (Fig. 10) consists of nearly cubical cells, though they are sometimes elongated tangentially.

Sections of the bark from a 5-year-old stem were 1.5 mm. in thickness (Fig. 14).

Outer bark—10 to 12 rows of small brown unlignified cork-cells; total radial width 80 microns.

Middle bark—unchanged except for numerous masses of stone cells, usually elongated tangentially, the largest mass being 630 microns, about 20 cells, in this direction. The radial or longitudinal dimension of these stone cell groups seldom exceeds 200 microns, though in one instance a group measured 400 microns. They seldom exceed 8 or 10 cells in these directions. The cell lumen is usually very small, and while pores and stratifications are visible they are not well defined. The walls are strongly lignified.

Inner bark—this is now 1 mm. thick. Occasional groups of unlignified primary bast may still be seen, but many large stone cell-groups have been developed in the outer portion of the inner bark. These groups lie between the medullary rays along with the small groups of first-formed secondary bast. The medullary rays, 1-, 2- or 3-cells wide, are distinctly seen extending back to the cambium. They are from 100 to 300 or 400 microns apart. There were 46 rays in 7 mm. of bark. Between the rays 5 tangential rows of small bundles of secondary bast with crystal fibers were found. In tangential section the bast is in long interweaving strands, 6 to 12 or 14 cells wide, bordering the medullary rays,

the strands separating so as to snugly enclose the ray. The medullary rays are elliptical, ranging in height from 100 microns (8 cells) to 1.5 mm. (100 cells), and in width at their widest part from 30 microns (2 cells) to 90 microns (4 cells). In the majority of cases they are 3 cells wide throughout most of their length, but narrowing to 2 cells, then to 1 cell toward their upper and lower edges.

The phloem contains a few sieve tubes in which the transverse sieve plates could not well be differentiated, accompanied by companion cells and many parenchyma cells. The parenchyma cells are rounded or angular in transverse section, oval in longitudinal section, contain living contents and serve for starch storage. Calcium oxalate crystals, except the prismatic ones in the crystal fibers, are not so abundant in the inner bark as in the middle bark. Occasional rows of rosettes and isolated rosettes and prisms are seen. One isolated prism was noted, measuring 35 microns across, though seldom do crystals of the inner bark exceed 20 microns. The primary crystals of the middle bark, however, attain a diameter of 30 and even 45 microns.

The examination of specimens from the commercial drug gave no new features except a thickening of the inner bark. The thickest piece of bark examined was 8 mm. across. In this specimen the outer bark did not exceed 0.150 mm. and contained 26 rows of suberized cork cells. The middle bark was 1 mm. in width and in 10 sq. mm. contained 34 groups of stone cells, arranged in 4 irregular rows. The inner bark was 7 mm. thick and contained 10 tangential rows of bast bundles. It was noted also that many small groups of stone cells were found associated with the bast in the inner bark (see Fig. 16). Starch was quite plentiful in the medullary ray cells and phloem parenchyma. Rosette aggregates and prisms isolated or in longitudinal rows were fairly abundant and the bast bundles and crystal fibers differed not from previous description.

An unusual specimen was met with, in which the secondary bast was practically absent. The specimen was 5 mm. thick, the middle bark contained stone cell groups and a few such groups were found in the inner bark, but with the exception of a few very small bundles in the outer portion of the inner bark, no bast was found.

It might be said that, on the average, stone cells constitute more than half of the lignified tissue of the drug Rhamnus Purshiana.

The Powder:—The most conspicuous element of the powder is the masses of bast with the associated crystal fibers. These bast masses in commercial powder (No. 60) are often more than 1 mm. in length and usually 2, 3 or 4 cells wide. The individual bast and crystal fibers are distinguished from one another with difficulty in these masses and only occasionally are the completely separated fibers found in the powder. However, the long rows of prismatic crystals show very distinctly, even after the use of the hydrochloric acid in connection with the phloroglucin test. It is to be noted that when a crystal fiber is observed along an edge of the mass of bast, in profile view as it were, the septum walls which are gradually thickened and lignified toward the thickened lignified wall adjacent to the bast are plainly seen. The outer wall is often missing, being pulled off apparently with the adjacent parenchyma cells (Fig. 22). These bast masses are usually free from any adhering parenchyma.

Almost equally numerous are the masses of strongly lignified stone cells, usually dense and of about 100 to 300 microns in each direction. Some smaller groups and some nearly isolated stone cells are found. The crystals associated with the stone cell groups are not nearly so much in evidence as those on the bast masses. In the larger groups the individual stone cells are difficult to distinguish, but in the smaller (Fig. 17), it is seen that in size, shape and markings they correspond to the description already given.

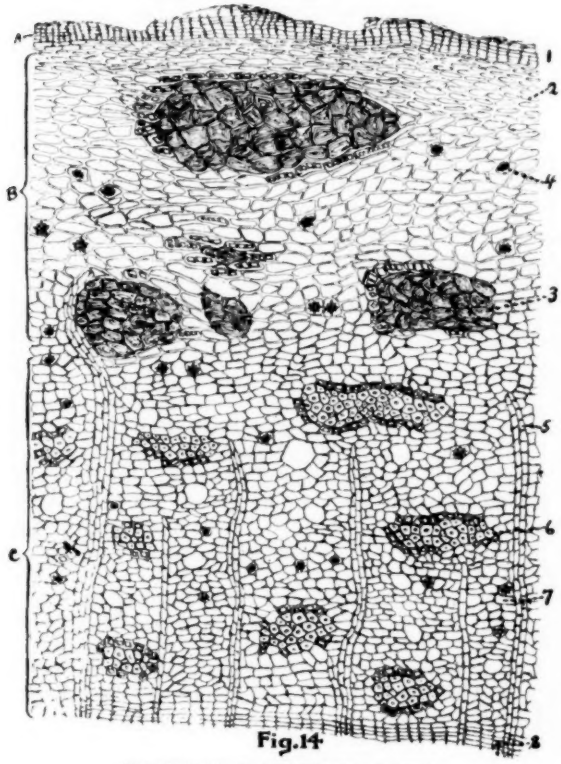


Fig.14

RHAMNUS PURSHIANA BARK.

Fig. 14.—Transverse section of bark 1.5 mm. thick from a 5-year-old stem. A—outer bark, B—middle bark, C—inner bark. 1—6 to 12 rows of cork cells; 2—collenchyma; 3—group of mature stone cells with accompanying prismatic crystals; 4—parenchyma with occasional rosettes; 5—medullary ray; 6—secondary bast with crystal fibers; 7—phloem consisting mostly of parenchyma with an occasional rosette or isolated prism of calcium oxalate; 8—cambium. (X 150, reduced ⅓.)

Fragments of cork, yellowish or brownish in color, are present. They seldom show the very regular arrangement of the cells in radial rows, but present a surface view (Fig. 18), or are irregular masses.

The bulk of the powder consists of masses of parenchyma tissue. The rather thick-walled collenchyma-like cells of the outer middle bark are occasionally seen, pieces of middle-bark parenchyma with rosettes are quite common, and pieces of phloem parenchyma with fragments of medullary rays in either radial or tangential view are abundant. In these phloem masses the cells of the medullary ray in radial view (Fig. 20) average 20 by 25 microns, while their walls are usually thin and unpitted, though sometimes thicker and pitted. In tangential view (Fig. 31), the rays are elliptical, usually 3 cells wide and 8, 10 or more cells long. The cells are irregular or rounded in shape.

Scattered throughout the mount are numerous free prismatic crystals and rosette aggregates. But seldom does the diameter of the rosettes exceed 20 microns or of the prismatic crystals 15 microns.

The parenchyma cells of the medullary rays and phloem are more or less filled with single spherical starch grains seldom exceeding 4 microns in diameter and without distinctive markings (Fig. 19).

(To be continued.)

Section on Pharmacopoeias and Formularies

Papers Presented at the Sixty-Second Annual Convention

THE HOMEOPATHIC PHARMACOPŒIA OF THE UNITED STATES.

GEORGE M. BERINGER, PH. M.

The appearance of the Third Edition of the Homeopathic Pharmacopœia of the United States, is one of the events of the present year that has received very little consideration in pharmaceutical circles. Homeopathic medicines are dispensed by many pharmacists and, in some localities, to quite a large extent. A knowledge of the basic principles of homeopathic pharmacy and the differences in the methods and practices should be acquired by every pharmacist. A more extended acquaintance with the materia medica of homeopathy is essential to those regularly dispensing such medicines and for these a careful study of the book is necessary. It has been the desire of the homeopathic school of medicine to have the Food and Drugs Act of June 30, 1906, amended so as to recognize this volume as the legal authority and standard for homeopathic drugs. These various considerations all indicate that homeopathic standards are of interest and importance to the drug trade and justify the presentation of this paper.

At the meeting of the American Institute of Homeopathy held in Pittsburgh in 1912, a committee of six homeopathic physicians was appointed to prepare a revision of the Homeopathic Pharmacopœia, the previous edition of which had been published about eleven years prior. The following year, the committee reported the completion of the revision and the publication was authorized and the book has now appeared within about two years after the appointment of the committee.

The promptness with which this committee has completed its work, is certainly very commendable. The impression, however, must not be conveyed that the revision has been made with that thoroughness and aim at scientific exactness that has characterized the revision of the Pharmacopœia of the United States.

A critical examination of the volume shows that but very few pages of the previous revision have been rewritten. The third edition contains 680 pages, the second edition had 674; the additional six pages are accounted for by the introduction of a new table "Showing Percentage of Alcoholic Strength of Tinctures."

The revision has been largely one of bookmaking with the rewriting reduced to a minimum. The preface, historical and introductory notices occupy twenty pages as in the previous edition. The General Pharmacy, containing instructions for making tinctures, dilutions and standards for solvents and diluents, occupies the same space and page for page as in the former edition and with only a few minor changes. Part II is devoted to "Special Pharmaceutics," or the official

homeopathic materia medica and, as in the previous edition, this occupies pages 51 to 596, inclusive.

The admissions have been artfully fitted into the text. Where it became necessary to introduce a new drug the plan commonly adopted was to select a drug for deletion and the page plate cut in such a way as to make the changes necessary with the least amount of type setting. Thus on page 482, Ranunculus Flammula was deleted and Radium Bromide sandwiched in with two other Ranunculi before and two following and thus the strictly alphabetical arrangement was destroyed. On page 532, Spiræa Ulmaria, queen of the meadow, was deleted and Sparteine Sulphate was introduced, following Spigelia and not in alphabetical sequence. As the text for Sparteine Sulphate occupied less space than that previously required for Spiræa, several pages had to be recast, but the printer has minimized the resetting by leaving a blank space for about one-fourth of page 532. These examples serve to show an easy method of pharmacopœial revision.

Ten admissions to the official materia medica are recognized. These additions include a number of medicines more or less used in both schools, such as hawthorn berries, echinacea, white ash bark, thyroid gland, sparteine sulphate, strychnine phosphate and radium bromide. Not the least to be noted as an admission is Mephitis Mephitica, Skunk Poison, the offensive fluid secreted by the anal glands of the polecat.

The deletions are Coriaria ruscifolia, the toot berry of New Zealand, the strawberry, mercurous acetate, mercury black sulphide replaced by the red mercuric sulphide, ranunculus flammula, spiræa ulmaria, strychnine alkaloid and linden flowers still extensively used, especially among the Italians.

The volume reasserts that the essentials of homeopathic pharmacy, are the simplicity or singleness of its preparations and cleanliness. The drugs are never mixed or compounded in their preparation or in their dispensing. In accordance with the homeopathic axiom, only one medicine is used at a time. Each drug in its natural state, after proper comminution, is added to a prescribed solvent for the purposes of extracting and preserving and as a means of dilution. Great stress is laid upon the importance of cleanliness and the most conscientious care in the handling of drugs of different kinds so as to protect them from the vapors, odors and dust of others and storage is to be in cool, airy and darkened places.

Drugs are defined "as substances which have the power of disturbing the health of the living organism." The Homeopathic materia medica is in the main derived from the vegetable kingdom; the plant drugs constitute the majority of the official medicines. Thirty-two of the drugs included are of animal origin of which we are informed "only a few are in common use." The mineral kingdom is the source of many and also some of the chemical constituents of plants as well as some artificial chemical products are included.

The dry crude drug remains "the unit of medicinal strength." The directions of the British Homeopathic Pharmacopœia regarding this is adopted. This reads: "In every instance, the dry crude substance is to be taken as the starting point from whence to calculate its strength, and the mother tinctures contain all the soluble matter of one grain of the dry plant in ten minims of the tincture."

In the preparation of tinctures from fresh plant drugs, the amount of moisture present is determined by drying a weighed portion on a water-bath until it ceases to lose weight. Allowance for the percentage of water so determined, is to be made in the preparation of the menstruum. For the extraction of drugs either maceration or percolation is permissible. The former process is "recommended for gummy, mucilaginous substances and those plant drugs having much viscid juice."

It is to be observed that the mother tinctures thus made correspond to the first decimal dilutions (1x). The decimal system of dilution, that is one part of the drug or tincture to nine of diluent, is adopted as the standard and scale of attenuation and notation; so each successive dilution or trituration contains one-tenth as much of the dry substance as the preceding dilution or trituration. The older method of dilution recommended by Hahnemann and adopted for many years by his followers, was the centesimal scale, where each attenuation contained 1/100 part as much of the drug substance as the preceding attenuation. The decimal scale "affords less opportunity for the loss of curative opportunities or 'chances' than the other."

The solvents and diluents employed in homeopathic pharmacy are few and are tersely treated in "Part I, General Pharmacy." The descriptions, properties and tests are not stated with that positive exactness that is observed in other modern pharmacopœias, and the critic will note their insufficiency. Distilled water has no test for limit of ammonia or nitrous oxide. No ash limit is fixed for sugar of milk. Half of an ounce of a hot saturated solution (aqueous) ? of milk-sugar is directed to be added to an equal quantity of sodium hydrate to saturation, in order to show the inverting power of alkalies on lactose and subsequent reduction of copper solutions. A few cubic centimeters will be all that a chemist would require to make such tests. Under tests for alcohol it is stated "that when one volume of alcohol is mixed with half its volume of test-solution of potassium hydrate, the liquid should not at once become dark-colored; the non-appearance of the dark color will prove the absence of aldehyde, methyl alcohol or tannin." No other test is given and this certainly could not alone be accepted as a discriminating test for the presence or absence of methyl alcohol.

The directions regarding prescriptions are short and commendable. It is stated that the writing of prescriptions falls exclusively within the duties of the physician; he should exercise the greatest care and exactitude in giving his instructions to the pharmacist who is to be governed by them; not the slightest doubt should exist concerning the physician's directions; the name is to be plainly written, preferably, in Latin; the form should next be stated, that is tincture, dilution, trituration; the dosage form and number of doses should be explicitly given; and the dose and frequency of repetition should be plainly written under the head of "Signa." "Abbreviations facilitate the writing of prescriptions, they do not add to their intelligibility and hence should only be used in strict obedience to rules of abbreviations."

The presentation of the monographs in Part II follows the following general form:— Official title in Latin, Official English title, natural order, if of animal or vegetable origin; Synonyms, Latin, English and Foreign; Description; Habitat; History; Part Used; Preparations.

In those drugs that are considered as very active poisons, "requiring special caution on the part of physician and pharmacist," there is introduced in the paragraph "description," a maximum dose statement. Thus in Acidum Carbolicum, "A poison, maximum dose 2 grains highly diluted with water." Under Acidum Hydrocyanicum, "An active poison, maximum dose of 2 *per cent.* solution, 10 Minims." Under Arsenicum Album, "An active poison, maximum dose 1/12 grain, not to exceed 1/6 grain per day."

As by far the larger percentage of homeopathic materia medica is of vegetable origin, one would reasonably expect to note in this revision a decided improvement in the botany and pharmacognosy. In this we are sorely disappointed as only a few unimportant changes have, here and there, been made. From the studies of botanists and pharmacognocists for many generations, there has accumulated a mass of facts regarding the limitations of botanical families, genera and species; the botanical synonomy; the correction of names and errors of earlier botanists who frequently worked with insufficient materials; the sources of drug and food materials; the structural and anatomical characteristics of plants and drugs, etc. Little, if any, reference seems to have been made by the revisers to this storehouse of available knowledge, and even the work of systematic botanists on our native flora appears to have been neglected, as well as that on the foreign.

The Latin title given to a drug of vegetable origin is commonly the botanical binomial of the plant. As a rule, such titles are quite appropriate, but for others their validity is questionable. As examples, *Guaiacum Officinale* with the synonyms *Lignum guaiaci, Lignum vitæ, Bois de gayac* and *Guaiaholz* for Guaiac Resin, and *Croton Tiglium* for Croton Oil, which could readily have been placed with the other oils, such as cod liver and castor oils and oils of cajaput and sandal wood.

The determination to adhere closely to the rule to retain as the Latin title the name under which the drug was introduced into homeopathic literature, has led to the continuation of a number of names that should long since have been discarded. Some of these perpetuate old errors and of others it would be quite difficult to trace their history or connection with the drug. The "mephitic and alliaceous" skunk cabbage is a characteristic illustration. The title given is Pothos Fœti*dus*. Presumably this goes back to the Pothos fœtid*a* of Michaux; but it was early recognized that this plant was very distinct and Nuttall and other botanical contemporaries of a century ago pointed out that this plant could not be classified with the tropical American plants of the genus *Pothos*, nor with *Linnæus Dracontium*, and so Nuttall classified it under Salisbury's genus *Symplocarpus* and *Symplocarpus fœtidus* is the name that was commonly used by botanists for a century. It is now known that Rafinesque had even prior to Nuttall ascribed this plant to a properly described genus *Spathyema*, a name that is very appropriate and has been accepted by Britton and Brown and the more recent systematists as the correct name in accordance with the rules for botanical nomenclature. Yet the correct name, *Spathyema fœtida Raf.*, is not given even as a synonym.

The subject of Synonyms is admittedly a difficult problem and should be given

consideration in a pharmacopœia primarily for the purpose of determining standards, for defining exactly to what drugs the names are to be properly applied. The treatment here is such as to perpetuate many errors that scientists have long since corrected or buried and to create innumerable questions and doubts as to standards and what it is intended to include under many of the official titles. The revision has done absolutely nothing toward clarifying this confusion and jumble of the former editions.

Under the title of "Synonyms," numerous binomials are given, but in no instance is the authority for the name given. Any one who has paid the least attention to systematic botany, knows how dangerous is such a practice. The same name has not unfrequently been employed by one botanist as well as by different botanists to plants that were later differently classified and properly named. To continue to perpetuate such erroneous and misleading synonyms in a work on drug standards that seeks recognition as a legal authority, is inexplicable.

The few examples of this treatment of botanical synonomy permitted by space, will suffice to exhibit what I consider the grave defect common throughout part II. Under Aloe Socotrina are given as synonyms names that are with proper authority considered the sources of East Indian, Barbadoes and Cape Aloes.

Belladonna has twelve binomials given as Latin synonyms: two place it in genus atropa, two in the genus belladonna and eight different solanums would include it in that genus.

Chamomilla with nine Latin synonyms with six genera named, with *Matricaria Chamomilla Linne,* which alone would have definitely fixed a standard, given next to the last.

Cimicifuga has nine English synonyms in addition to twelve Latin which classify it with the following genera: Cimicifuga, Actæa, Botrophis, Christopheriana and Macrotys.

Cina (Santonica) has eighteen Latin synonyms, twelve of which are binomials and would recognize four species of absinthium and eight of artemisia. There is certainly need for a more definite statement here as some of the species of artemisia named contain no santonin and others very little.

Cinchona Officinalis, or China with Peruvian Bark as an English synonym. The Latin synonyms given are mostly those of plants that many years ago were considered as possible sources of commercial varieties of cinchona. The change in source due to the extensive cultivation receives scant consideration. *C. succirubra* is named in the text though not included in the synonyms, but *C. Ledgeriana,* Molus, is not mentioned at all. It was to the study of the effects of Cinchona that Hahnemann attributed his discovery of the "law of cure."

Cistus Canadensis—Frostweed. Here one notes a veritable confusion. The genus is Helianthemum and not Cistus as given in the title. The synonyms given include *Lechea major,* which title is properly applied to our common pin weed *Lechea major Mich.,* an entirely different plant.

Digitalis Purpurea—Campanula sylvestris is the first stated synonym. Is it not time that such an error as the naming of a scrophulariaceous plant of the genus Digitalis as belonging to the Campanulas should be forgotten?

Hyoscyamus Niger—The synonyms given include H. agrestis and H. flavus, two of the European species that have been noted as sophistications occasionally collected and admixed with the official hyoscyamus.

Illicium Anisatum—Star Anise. In this monograph, nine binomials are given, yet the uncertainty of the source is evidenced in the statement under History carried over from the previous revision, "although having many synonyms it is doubtful if star anise is the product of all." The intent is doubtless to describe the innocuous drug star anise, but both in the title (Illicium Anisatum) and among the synonyms (Illicium religiosum) is the poisonous star anise designated. The revisers were probably not aware of the study made in 1888 by J. D. Hooker, who determined that the true star anise was obtained from a species he named Illicium verum and that I. anisatum Linnæus and I. religiosum Siebold were different names for the plant yielding a false and poisonous substitute for the true drug.

Scilla Maritima—Squill. The binomials given would classify this plant as coming from the following genera: Cepa, Ornithogalum, Pancratium, Sancratium, Scilla, Squilla, and Urginea.

It is difficult to understand how with such misleading synonomy that purity and singleness of the drugs that it is claimed as so essential to homeopathic pharmacy, can be assured.

The animal drugs include quite a variety, some few of which are common to both schools. Among these may be mentioned Animal Charcoal, Cantharides, Castor (formerly official in the U. S. P., 1870), Cochineal, Musk and Cod Liver Oil. The Honey Bee supplies two titles, that of the Apis Mellifica or Honey Bee with directions for making a tincture from the live bees, and the Apis Virus, being the Honey Bee Poison, with formula for making a trituration from the extracted stings. The Star Fish, Red Coral, Fresh Water Sponge, the juice of the Purple Mollusk and Sepia, the dried inky secretion of the Cuttle Fish, are some of the oddities in this group of drugs.

Among snake poisons are given Crotalus, the Rattlesnake venom, the use of which hypodermatically as a cure for epilepsy has been recently exploited in general practice; Elaps Corallinus, coral snake; Lachesis or Viper; and the Naja Cobra venoms.

From the Spiders we have Aranea or Diadem Spider, Mygale or Bird Spider, the Tarantula, of which two distinct titles and species are named, the Spanish and Cuban, and the Theridion or Black Spider of Curacoa.

In the treatment of chemicals, one notes that the tendency has been to follow what has been called the "bob-tail" spelling, that is, using the termination "id" for Chlorides and Bromides, and "fate" for Sulphates. Yet even here there is a lack of consistency. Radium Brom*ide* is found with the "ide" termination, and Sparteine Sul*phate* is with the "phate" termination. Yet Cinchonine Sulphate is Cinchon*in* Sul*fate*. In some of the alkaloids, the U. S. P. rule of terminating alkaloidal names in "ine" has been followed. In others, it has been forgotten. For examples, Cinchon*in* Sul*fate*, Eser*in*, Bebeer*in*, Apomorph*in* Hydrochlor*id*, Pilocarp*in* Hydrochlor*id*. Others are spelled with the "ine," such as Codeine, Hydrastine, Morphine, Narceine, Narcotine, Caffeine, Brucine, Atropine, Atropine

Sul*fate*. In some of the Quinine salts, the Quinine is spelled with "in," the others with "ine" terminations, and for some reason Santonin has been changed to Santon*ine*.

Some of the Latin titles given for chemicals and mineral products are simply the English without any attempt at latinizing. For example, Borax and Petroleum.

Throughout the chemical monographs the molecular weights have been corrected on the basis of the recent international atomic weights, but through some oversight there is left in the book (page 606), the old table of atomic weights based on H = 1 and O = 15.96, and so we have here again a dual standard for atomic weights and calculations of molecular weights.

There is no attempt at assaying any of these chemicals. In the descriptions the strength of standard is sometimes mentioned, but these descriptions are not always of the medicinal article. Acid Hydrocyanic is accompanied with a description describing an acid which boils at 27° and congeals at 15°. Here the attempt is evidently made to describe the pure Hydrocyanic Acid, yet it is subsequently stated that 2% acid is to be used in making the dilutions and the dose given is for the 2% acid.

Throughout the chemicals the United States Pharmacopœia standard is frequently referred to, sometimes properly and sometimes without recognizing the changes that have taken place in the more recent editions of the U. S. P. Under the title of Ferrum Carbonicum, Saccharated Carbonate of Iron, the process of the U. S. P. VIII is designated. Under the title of Ferrum Iodatum, the synonym of Saccharated Iodide of Iron, a formula is attached credited to the U. S. P. without date. The formula for that preparation, however, is that which was included in U. S. P., 1890. Under the title of Ferrum Muriaticum, there is given a formula for the preparation of Solution of Ferric chloride, U. S. P., but here the formula of the U. S. P., 1890, is retained without noticing that the U. S. P. VIII (1900) reduced the Iron content of this solution from 37.8% Ferric Chloride to 29%.

It is to be noted that throughout the book, formulas are only given for the preparation of Tinctures and Triturations with their dilutions and attenuations. No mention is made of other forms of medications that are used in homeopathic pharmacy, such as liniments and ointments and for which standard formulas should be included in a pharmacopœia.

Part 3 of the book is devoted to select tables for reference. The first of these is the list of signs and abbreviations used in prescription writing. Another useful table is that of the list of medicines with the pronunciation of the titles correctly indicated.

SENSITIVE TEST FOR IRON.

A little hydrazine is added in order to reduce ferric to ferrous iron, or to prevent oxidation of ferrous salt. To 50-70 mils of the solution a little saturated alcoholic dioxime solution is added. If the smallest traces of iron are present the liquid becomes intensely red.—L. Tschugaeff and B. Orelkin (*Zscht. Anorg. Chem.*, 1914).

Editorial

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THE FUTURE.

THE question of what is to be the pharmacy and the pharmacist of the future is one most interesting, naturally, to all the members of our profession. The changes which have come within its practice within a few short years, have caused us to deeply consider the question, What is to be the outcome to Pharmacy of all this apparent radical, this ultra change in ambition and in development?

Of course it is folly to regret this change. Mutation is inevitable in all things. Everywhere there is a constant evolution or devolution in progress, from which metamorphosis must result and which we must inevitably encounter and for which we must be prepared.

It has seemed always to be the desire of man to produce something immutable. The Pharaohs, when they built their pyramids and placed within them their sarcophagi, wished to build for all time and vainly thought they could there rest until the last day. The priests of all the ancient religions, of the Temples of Vesta and Mars, of Jupiter and Saturn, the very altars of which stand unworshipped in the Forum of to-day, all thought the faith they revered was to endure till the end of time. In all things we must anticipate a change, and hold ourselves in readiness to guide that change rightly and for the good of all.

We fear to break from the established course; we do not like to be forced from our accustomed surroundings; we know the evils we have, but know not those which may come to us under new conditions, when we cut adrift and sail out over the unknown and uncharted seas.

From the days of Accad, of which we get our first mention in Genesis, the science of Pharmacy has been in constant process of evolution, and through the chiliads of years, since that time, there has been a constant, never-failing change, progression and regression, like the ever-moving waves upon the ocean's bosom; the tides upon the shingly beach.

So knowing the absolute certainty with which changes are to come, it is for us to seek,—not to retain the old conditions, the old ways and the old methods,—but to boldly and resolutely strive to make these changes such as will elevate and uplift the science and the art of which we are the disciples.

To the ordinary mind it would almost seem that Pharmacy, as we knew it, that of the olden time, had so radically changed that but slight connection existed between that and the art of Pharmacy of to-day. But these changes are but of the surface. Pharmacy is to-day as it has always been since the days of Babylon and Nineveh and the cuneiform prescriptions, the science and the art of preparing medicines for the healing of the sick. And so it will continue to be until the end of time. The "Telinon" and the "Mendesium" of the ancient Egyptians were

prepared in the same way as our ointments are prepared at the present time. And when Macaulay's traveller from New Zealand "shall in the midst of a vast solitude, take his stand on a broken arch of London Bridge to sketch the ruins of St. Paul" then will Pharmacy be still existent, ministering to the ills and woes of Humanity.

With such a prospect before us we should simply look upon the aberrations of the pharmaceutical horologe as only most ephemeral. We are passing through what we might term the "Dark Ages" of Pharmacy; a pharmaceutical regression, from which Pharmacy will emerge purified and better. It is impossible for Pharmacy to permanently move backward. It is a science and as such it can never die. The soul, the essence of Pharmacy, is its knowledge of drugs which makes it useful to mankind. Surround it as you may with Commercialism; adulterate its pure stream as you will with baser things, yet above all, there must come a time, when these things will pass away and the pure bright light, radiating from its torch, will shine forth in undimmed radiance. This time must come, for

> "Knowledge is now no more a fountain sealed;
> Drink deep until the habits of a slave,
> The sins of emptiness, gossip and spite,
> And slander die. Better not be at all
> Than not be noble."

And it is to make Pharmacy noble and great that we should dedicate ourselves.

How can we do this? By making ourselves noble and great. By adding to ourselves each day something of knowledge which will all tend to the uplift of our profession, to the making of that profession noble.

The Pharmacy of America is determined by the character of its fifty thousand pharmacists, and upon us depend the question whether it shall be noble or ignoble, base or true.

In this work the American Pharmaceutical Association must take a leading part. It should keep its face steadily toward the rising sun of progress and, putting aside all base and lowering tendencies it should uphold the dignity, the purity of Pharmacy and its aims.

> "Once to every man or nation, comes the moment to decide,
> In the strife of truth with falsehood
> For the good or evil side."

And it is for us, at this moment to decide that Pharmacy shall be noble, shall be pure, shall be true to itself and to its traditions.

Let every one of us gird himself to this work. Let us highly resolve, each day that we as pharmacists will be better, more noble and more skilled, and we will do our part to make of Pharmacy what we all desire to see it,—not merely an end to the attainment of worldly wealth, but a means of serving humanity better, more wisely and well.

THE UNSOLVED PROBLEMS OF CHEMISTRY.

A NUMBER of years ago Prof. Ira Remsen of the Johns Hopkins University wrote a most entertaining paper on the above subject and to-day the questions to which it called attention are as involved as they were at that time. There still remain these unsolved problems which some day we may hope to master, but which, at the present time, are as difficult and impossible for us to solve as is the *pons asinorum* to the primary student of arithmetic.

Who can tell us definitely what becomes of the sugar we dissolve in our daily cup of coffee or tea? We say it is in solution, but what is the meaning of that term? We can recover it from that solution to be sure, but in what form is it while it is in that solution. People said the apple "fell," but until Newton no one knew the universal law, which acts on the mightiest of suns and the tiniest of sands; which holds Boötes and Sirius and the Great Bear in their fixed places in the everlasting heavens.

We speak of elements, what are they? Things impossible to simplify? No, things it is impossible for us to break up, that is all. What we know is but little more than Boyle knew when he wrote his Scyptical Chymist in 1660 and then the four elements, earth, air, fire and water, were the last words of science on the elementary things of the world.

If the Cosmos is the result of evolution, as scientists tell us, then all the elements must have had a common origin. If all life comes through the protoplasm and the protozoa, then a common source must exist for all living organisms. But of all this we have not the faintest knowledge. The diamond and the graphite of the lead-pencil are the same element we are told. Both pure carbon. If so why do they differ? Why should the one be hard and the other soft, one translucent and one opaque, one conduct electricity slowly and the other with facility?

We think we know all about water. We know its constituents, hydrogen and oxygen, but why does it dissolve as much chloride of sodium at 32° as at 212° when it dissolves much more of other substances at the higher temperature? Why does it suddenly expand when it freezes?

To many of these and like other problems the pharmacist has an introduction and it is to the credit of the profession that some of the greatest advances in chemistry came through the humble pharmacist's apprentice. Scheele entered the drug-business at the age of thirteen and Baron Liebig began his apprenticeship in a drug-store at fifteen. And so to these unsolved problems of chemistry we invite the attention of all pharmacists. Study and thought are the essentials of all advance. Not alone the study of books, but the study of things and these things are immediately under the eye of the pharmacist. To every boy entering the drug-business to-day the opportunity is offered to solve some of these problems and mark a step in the world's advance.

Book Reviews

DIGEST OF COMMENTS ON THE PHARMACOPOEIA OF THE UNITED STATES OF AMERICA (VIII) AND ON THE NATIONAL FORMULARY (III) for the calendar year ending Dec. 31, 1913 by Murray Galt Motter and Martin I. Wilbert, Bulletin 98, Hygienic Laboratory.

It is with pleasure that we can say in all sincerity that this Manual should be in the hands of every pharmacist who is truly a pharmacist, in this country.

There is not a page in the book but what is of interest to all those actively interested in the drug-business in any department. While there is much in the book that is alien to its title, yet no fault can be found with a line of its contents which are well-selected and well-arranged to impart useful knowledge to druggists regarding many points upon which they may need information.

It is more than its title would signify. It is really a Review of the field of Pharmaceutical literature for the year, which in any way has a bearing on the intent or the contents of the U. S. P. and N. F. Instead of being devoted to the past alone it is of the present that it presents a picture and it contains in its pages a wealth of information which, if utilized, cannot fail to elevate and improve the practice of pharmacy and to furnish valuable information to every pharmacist.

Any one who examines the publication will be surprised at the amount of information it contains upon all subjects connected with the practice of Pharmacy and we urge our readers to secure this book in order that they may be advantaged by the information contained within it.

It would be most regrettable for any druggist not to take advantage of this knowledge, so freely offered. Subjects are treated briefly but the references it contains allow any one to easily consult the source of the knowledge upon which he may desire further information.

The book might very well be termed an Annual of Pharmacy of the United States and merit well the more comprehensive and desirable cognomen.

TESTS FOR VANILLIN.

Vanillin gives with certain classes of organic substances typical color reactions under the influence of hydrochloric or sulphuric acid. The observations made with amines, acid amides, and imines (where the color becomes yellow), and with phenols (where the color becomes red and violet) give hope that with other classes characteristic colors may also be produced. Many of the tests referred to may also be used in cases in which a positive result with phenylendiamin, phloroglucin, or resorcin is reckoned to be insufficient.—E. P. Häussler (*Zscht. Anal. Chem.*, 1914).

Contributed and Selected

REPORT OF THE CHEMISTS' SUB-COMMITTEE ON STANDARDIZATION AND DRUG TESTING.

The General Committee on Standardization and Drug Testing have requested that we investigate methods of analysis for Elixir Lactated Pepsin, nitroglycerine, diastase and papain preparations.

Each of these problems has received our most careful attention. All of the methods herewith recommended have been tested in our laboratories. We present them to you as being the most efficient known to us at this time.

ASSAY OF ELIXIR OF LACTATED PEPSIN.

Since the different pharmaceutical houses market this preparation in various strengths, it is impossible for us to describe other than a general method. We suggest that you take of the elixir, a quantity containing approximately 0.1 gram of pepsin. Dilute this to 150 cc. with a solution of 9 cc. dilute hydrochloric acid (U. S. P.) in 291 cc. distilled water. Proceed from this point directly as outlined in the Pharmacopœia of the United States, Eighth Revision, under the Assay of Pepsin, page 335. It will be found that the other ingredients present in the original elixir will not interfere with the pepsin digestion in the dilution above recommended.

We believe the pepsin assay to be the best method of testing the activity of this elixir. However, we also strongly recommend that you estimate the alcohol contents of each and every lot, since it is advisable to verify the statements of alcohol percentage made on the label.

As you well know the methods of alcohol determination in general practice today, are still more or less inaccurate. We believe that the forthcoming Pharmacopœia is to give us an official method. This will be welcomed by all. Meanwhile we suggest that you employ the distillation-method described in Leach's "Food Inspection and Analysis," 1911 edition, page 658.

ESTIMATION OF NITROGLYCERIN.

Two determinations are necessary, one on the original supplies and the other on the finished products. There are available, two types of raw material, one an alcoholic solution and the other a trituration of nitroglycerin with some inert material such as milk sugar. Likewise the finished products are of two types, the alcoholic solution and the tablets.

Engelhardt (Journal of the American Pharmaceutical Association, 1913, page 163,) states that rather accurate results are obtained in the assay of alcoholic solutions of nitroglycerin by evaporating a measured sample spontaneously and drying the residue in a desiccator over sulphuric acid to a constant weight. We are told that this method has been approved as the official assay of the new Pharmacopœia. You will find full details on page 527, Journal of the American

Pharmaceutical Association, year 1914. You may, however, also proceed as described later under the estimation of tablets and triturations by diluting the alcoholic solution to a definite volume with ether in a manner as suggested under the "Preparation of Sample."

As you know, the Department of Agriculture has recommended two colorimetric-methods for the assay of nitroglycerin, the Modified Scoville and Modified Hay methods. For the estimation of both the original trituration used for manufacturing, and the finished tablets we can only repeat their method. We take exception, however, to their method of extraction by macerating the tablets or trituration under ether and using this ether-extract for the determination. There is no doubt but that this method will exhaust a good hypodermic tablet. However, it has been clearly proven by Dr. Thorburn of the Pitman-Moore Company and verified by Mr. Summers in the Laboratories of The Abbott Alkaloidal Company, that this method does not completely exhaust compressed tablets, granules or poorly made hypodermic tablets. It therefore seems advisable to us to recommend Dr. Thorburn's extraction-method in preference to the maceration-method.

ESTIMATION OF NITROGLYCERIN IN TABLETS OR TRITURATION.

Preparation of Sample (Thorburn Modification):—Disintegrate a quantity of tablets or trituration containing about 0.0162 gram (¼ gr.) of nitroglycerin in 20 to 25 cc. of water. Extract four times with successive portions of 25 cc. of ether. Combine ether extracts and make up to 100 cc. in a volumetric flask. Then proceed by either of the following methods.

Estimation by the Modified Scoville Method:—Of the above ether solution place 40 cc. in a carefully dried and tared 50 cc. beaker. (A second aliquot of 20 cc. may be used as a check.) Evaporate the solvent in a vacuum desiccator. Apply the vacuum gradually so as to prevent ebullition. Leave the beaker in the vacuum 30 minutes after the ether has evaporated. Weigh and calculate ether extract per tablet. Treat the residue with 2 cc. phenoldisulphonic reagent, rotating the beaker in such a way that the reagent comes into contact with the entire inner surface. After 10 minutes add water and wash into a 100 cc. flask. (If a check analysis as suggested was made, wash this into a 50 cc. flask.) Dilute to the mark and place 10 cc. (representing 1 tablet) in a 100 cc. flask, add about 50 cc. water and a few drops more potassium hydroxide solution (20%) than is required to neutralize the acid. (Do not use sodium hydroxid.) Dilute to the mark and compare the color with that produced by a standard nitrate solution similarly treated. Use any convenient colorimeter or Nessler tubes.

Reagents and Standards:—

Phenoldisulphonic Acid Reagent:—Dissolve 25 grams of pure white phenol in 150 cc. of concentrated sulphuric acid, add 75 cc. of fuming sulphuric acid (13% So_3), stir well and heat for two hours at about 100 degrees.

Standard Solution:—Dissolve .7217 gram pure KNO_3 in 1 liter of water. Evaporate 10 cc. of this solution just to dryness on the steam bath. Cool and treat the residue with 2 cc. phenoldisulphonic acid reagent, observing the precautions noted above and using a glass rod if necessary to aid the solution of the

residue. After 5 or 10 minutes dilute to 250 cc. Each cc. of this solution contains .004 mg. nitrogen. Add an excess of KOH solution to an aliquot of this solution and dilute to 100 cc. It is advisable to prepare a standard of approximately the same color as the unknown. Nitroglycerin is 5.4 times nitrate nitrogen.

Estimation by the Modified Hay Method:—Of the above described ether extract place 10 cc. in 120 cc. Erlenmeyer flask, dilute with 5 or 10 cc. alcohol and add about 5 cc. of ½% alcoholic potassium hydroxid. Cover with a watch glass and allow to stand 10 minutes. Place on steam bath, allow to boil, remove the watch glass, and when most of the liquid is evaporated, add about 25 cc. water and leave on steam bath until the odor of alcohol can no longer be detected. Cool and dilute to 250 cc. Each cubic centimeter of this solution represents .01 of a tablet. Introduce 5 cc. representing .0324 milligram nitroglycerin into a 100 cc. graduated flask, dilute with sufficient water to make the volume 90 to 95 cc., add one drop concentrated hydrochloric acid, then 2 cc. sulphanilic acid solution and 2 cc. napthylamine hydrochloride solution. Complete the volume with water. Prepare at the same time and in the same way, standards containing known amounts of sodium nitrite, by taking 80 cc. of the standard solution of sodium nitrite, and adding one drop of concentrated hydrochloric acid, 2 cc. sulphanilic acid solution and 2 cc. napthylamine hydrochloride solution, and completing volume to 100 cc. with water. Stopper the flask and mix well. Compare the colors after 30 minutes, each cc. is equivalent to .00064 mg. nitroglycerin.

Reagents and Standards:—

Sulphanilic Acid Solution:—Dissolve 1 gram in 100 cc. of hot water.

Napthylamine Hydrochloride Solution:—Under a hood boil .5 gram of the salt with 100 cc. of water for 10 minutes, keeping the volume constant. Filter and keep in a glass-stoppered bottle.

Standard Solution of Sodium Nitrite:—To a cold solution of about 2 grams of sodium or potassium nitrite in 50 cc. of water, add a solution of silver nitrate as long as a precipitate appears. Decant the liquid and thoroughly wash the precipitate with cold water. Dissolve in boiling water. On cooling the silver nitrite is precipitated. Dry the crystals in the dark at the ordinary temperature (preferably in a vacuum). Weigh out 220 milligrams of the dry silver nitrite, dissolve in hot water and decompose with a slight excess of sodium chloride. When the solution becomes clear, dilute to 1 liter. Dilute 5 cc. of this solution to 1 liter. This second dilution is the standard to be used. It contains 0.0001 mg. nitrite per cc.

Only nitrite free water should be used in the estimation by the Modified Hay method.

Of the above methods the Scoville is more generally employed because of the rapidity with which it can be operated. It is to be remembered, however, that both of the above methods involved a colorimetric comparison, and that different operators are better able to judge one color in preference to another. As you well know, the Scoville method gives a yellow-colored solution while the Hay method yields a rose-colored solution. We suggest, therefore, that you try both methods on a known standard and then adopt the one that gives the most consistent results. So far as accuracy is concerned, outside of the end color comparison neither method is to be preferred over the other.

This committee most emphatically reiterates Mr. Baker's statements to you of a year ago that nitroglycerin tablets when properly bottled do not deteriorate on standing. During the past year, we have tested monthly a specimen lot of tablets. These tablets are to-day as potent as they were one year ago.

All that is necessary is to devise a method of manufacture which will give a product true to label, then bottle properly.

DIASTASE.

As you all probably know, diastase is to be official in the forthcoming Pharmacopœia. We are also to have an official method of assay. The provisional method has already been described on page 15 of Part 1, First Proof, United States Pharmacopœia, Ninth Revision.

As Mr. Baker of the Norwich Pharmacal Company, has closely studied this method for the committee, we deem it best to quote his complete report on this subject.

"Comparison and Criticism of Two Methods for Determining the Starch Converting Power of Diastase."

"I will represent the method proposed for the pharmacopœia, ninth revision, as method (a) and the method used by the N. P. Co. as method (b). This method is taken from, but slightly modified, to the one adopted by the Council of Pharmacy, A. M. A., as printed in the Journal A. M. A., Vol. 51, No. 2, Page 142.

"Method (a) is as follows: Mix a quantity of potato starch which has been purified as described under Pancreatinum, equivalent to 5 gm. of dry starch, in a beaker with 10 cc. of cold distilled water. Add 140 cc. of boiling distilled water, and heat the mixture on a water-bath, with constant stirring for 2 minutes, or until a translucent uniform paste is obtained. Cool the paste to 40° C. in a water bath previously adjusted to this temperature and add a solution of 0.1 gram of Diastase in 10 cc. of distilled water at 40° C. just previously made. Mix well and maintain the same temperature for exactly 30 minutes, stirring frequently, when a thin, nearly clear, liquid should be produced. At once add 0.1 cc. of this liquid to a previously made mixture of 0.2 cc. of tenth-normal iodine V. S. and 60 cc. of distilled water. No blue nor reddish color should be produced.

"Method (b). A clean grade of potato starch is thoroughly washed and carefully dried at a low temperature and finally at a higher temperature to about a 10% moisture content. The exact moisture content to be determined in a separate experiment. For the test enough of the starch is taken (about 11 gms.) to make to 500 cc. of an exactly 2% (anhydrous) starch content. The boiling of the paste should be continued for 10 minutes with constant stirring to keep from burning. For each test quantities of exactly 25 gms. of the paste are weighed in a series of 250 cc. flasks placed in a water-bath and kept at a temperature of 40° C. The Iodine test solution is made by dissolving 2 gms. of Iodine and 4 gms of Potassium Iodide in 250 cc. of distilled water, 2 cc. of this solution is then diluted with pure water to make 1000 cc. The diastase solution is made by dissolving or suspending 0.2 gms. of diastase in 100 cc. of distilled water. The solutions are used in the following way: Definite volumes of the solution are added to the different flasks containing the starch solution and the mixtures are well shaken. The volumes added may be as follows: 4 cc., 4.5 cc., 5 cc., 5.5 cc., 6 cc. In eight minutes tests are begun by removing volumes of 5 drops from each of the digesting mixtures by a pipette and adding this to 5 cc. of the dilute Iodine solution in a clear white tube standing over white paper. If at the end of 10 minutes drops from one of the flasks fail to give the Iodine reaction, we are ready for the more accurate test; for example, the flasks containing 5 cc. diastase solution did not respond to the Iodine reaction, but the one containing 4.5 cc. did, then a second test would be carried out under exactly the same conditions as the former using 4.6, 4.7, 4.8, 4.9 and 5 cc. diastase solution to 25 gms. of the starch paste. The diastase solution must be of the same temperature as the starch paste. The test is carried to the loss of all color. The diastase solution should have been just previously made and, if working for any length of time, fresh solutions should be made from time to time, as aqueous solutions of diastase are very unstable and soon lose their power of conversion. The dilute Iodine solution should not be put in the tubes until just before it is needed.

"A good diastase will convert at least 50 parts of starch to a colorless end point in 10 minutes. While this method is a 10 minute and the other method a 30 minute one, both methods checked on the diastase under examination as the following figures will show.

Method (a)			
Diastase parts.	100% starch to colorless end point parts.		Time.
" 1	"	40	10 minutes
" 1	"	50	15 "
" 1	"	55	22 "
" 1	"	60	30 "

Method (b)			
Diastase parts.	100% starch to colorless end point parts.		Time.
" 1	"	40	6 minutes
" 1	"	50	8 "
" 1	"	60	10 "
" 1	"	70	13 "

"The fact that the 10 minute method gave the same results as the 30 minute method is due to the vast difference in the strength of the Iodine solutions used. In method (a) we have 0.00254 gms. of Iodine in 60 cc. of water, while in method (b) we have but 0.00008 gms. in 5 cc. We, therefore, have 32 times more Iodine present in method (a) than in (b) and this will give a reaction with the starch diastase solution when the weaker one will not. This condition exactly counteracts for the difference in time for the two methods.

"Method (b) has a few important advantages over the one proposed for the U. S. P. 9th revision. The first and most important point is that when the starch paste is once made, twenty tests may be made from the 500 gms. With method (a) we are using a cumbersome amount of starch paste for each individual test and the test simply shows whether or not the sample tests are up to the U. S. P. standard and to find the exact value of the diastase will require probably several tests, which will make a very tedious task, making and cooling such large individual quantities of starch paste and the individual weighings of the diastase and also the longer period of time for each test.

"The second important point is the end point for the two methods used. In method (b) the end point is very delicate and cannot be mistaken as 5 cc. of the dilute iodine solution in a Nessler tube appears nearly colorless, and any blue, red, or yellowish color which may be produced can be detected with sufficient accuracy. In method (a) the solution is quite highly colored with free Iodine. The directions state to add 0.1 cc. of the starch diastase solution to the 60 cc. of the Iodine solution and no blue or reddish color should be produced. While there are no instructions calling for this, a careless or thoughtless worker might shake the tube slightly and disseminate a red color that is actually produced, so that it would be impossible to be detected. This allows a chance for a sample to be reported up to standard when possibly the starch is only taken to the dextrose or maltose stage.

"Both methods call for potato starch. While potato starch will give a higher value for diastase, and this may seem as a case of lowering standards instead of raising them, I am in favor of its use, because of the physical characteristics of the two. I have always been able to prepare a much more uniform paste from potato starch than from corn starch and would prefer raising the standard to 1/60 or 1/70 and still use potato starch."

The above discussion comparing Mr. Baker's modified method to the proposed pharmacopœia method is entitled to your profound consideration. As has been pointed out, Mr. Baker's method enables you to easily determine the exact strength of your diastase, while the proposed method for the Pharmacopœia is little more than a qualitative method. We believe that this Association should adopt Mr. Baker's assay for their official method. We also deem it advisable for the Association to send a copy of Mr. Baker's report to Prof. Remington, Chairman of Revision Committee, for his further consideration as a better method for the new Pharmacopœia, for it is well to remember that no matter how poor a method may be, should it be included as the official method in the forthcoming Pharmacopœia, the Association members will be compelled to adopt it in their laboratories. The time has come when the Pharmacopœia has become a legal standard rather than a pharmaceutical guide.

PAPAIN.

The final subject for consideration assigned to us by the General Committee is the assay of papain. This is indeed a difficult task.

There is considerable difference of opinion among the various authorities not

only upon the media to be employed but also the substance to be digested. It appears that papain contains two distinct enzymes—one acting in acid and the other in alkaline media. Arguments have also been advanced in favor of testing papain not only on raw beef but also on blood fibrin or egg albumin. It is our opinion that raw beef is the best substance for this purpose, since it more nearly duplicates in the laboratory the function of papain in the body.

Graber (Journal Industrial and Engineering Chemistry, 1911, Page 921), has shown that papain is most active in acid-solution, neutral media ranking second and alkaline media, third. While this may be true, the testing of papain in acid solution does not eliminate an adulteration with pepsin. It has been found in the Laboratories of The Abbott Alkaloidal Company, that a 5% adulteration with 1/10,000 pepsin would give an otherwise inert papain an activity of 1/30, when tested in acid media. The true question is "how does the papain react in the body?" If it digests fibrin best in acid solution, it will perform this function in the stomach and not in the intestine as is now maintained by some. We should, therefore, devise some method that will eliminate adulteration with pepsin and still show the active power of the papain in acid solution.

A method now in vogue for testing papain in acid media is that of Graber, described in the Journal of Industrial and Engineering Chemistry, 1911, Page 921.

As a method for assaying papain in alkaline media we recommend the following, devised by Mr. Baker. It is conducted as follows: "The test is 1:30 in 6 hours at 50° C. That is, one part of papain should in 6 hours at 50° C. so completely digest and disintegrate 30 parts of raw beef that the undigested residue should not measure more than 2 cc. using 10 grams of beef for each experiment. The test is conducted on round steak free as possible from fat and gristle, which has been finely minced by passing through a meat chopper. For each test 10 gms. of beef, 100 cc. of distilled water made slightly alkaline to litmus with sodium carbonate, .3 gm. of ferment. Invert bottles once every 10 minutes as per U. S. P. test for pepsin. Pour in tall graduated cylinder at the completion of the assay."

While we have called to your attention these two methods, yet we most strongly recommend the following promising method proposed by Mr. Thorburn. This method is both unique and ideal in that it not only tests the papain in both alkaline and acid media, thus giving the total digestive activity, but also eliminates the possibility of adulteration with pepsin; as the pepsin, if present, is destroyed in the preliminary digestion. This method appears to us to be the best yet proposed for the assay of papain. The method is herewith quoted from Mr. Thorburn's report to the committee.

"Dissolve papain .400 gm. and sodium bicarbonate .750 gm. in distilled water enough for 100 cc. Heat to 50° to 55° C.

Scrape lean round steak (better results are obtained by scraping the meat to a pulp instead of grinding) rejecting gristle, fat, etc., to a pulp; weigh 10 gm. meat pulp and place in a 200 cc. digestion-flask; add 100 cc. of the warm solution of papain and sodium bicarbonate. Digest for four hours, shaking the mixture once every 10 minutes; then pour into a measuring cylinder and let stand at rest for one-half hour. If the digestion flask is fitted with a stopper carrying a small graduated tube it is of course much more convenient than pouring into a cylinder; in this case invert the flask and read after one-half hour's standing.

A blank digestion of the meat pulp with sodium bicarbonate should be carried along with the papain digestion.

Not more than 10 cc. of residue should remain after the alkaline digestion with papain.

After reading this residue, warm the mixture to 50° to 55° C. and add concentrated hydrochloric acid 1½ cc.—sufficient to neutralize the alkali and leave .2% to .3% of free acid.

Again digest for four hours shaking every 10 minutes. Let stand at rest one-half hour, then read the residue which should be less than three cc.; this gives the total digestive power of the papain as 1 to 25 four-hour tests which compares favorably with a 1 to 30 six-hour test."

It occurs to us that you would welcome our calling to your attention those drugs and chemicals that each of us have found deficient during the past year. We do this to impress upon you the importance of testing all your supplies, and also the fact that the label or brand is no criterion to purity. Each and every member of this association should at least test all crude supplies. We recommend this not only for your individual welfare but also for the good of the profession. You should also check-test your finished products. You should all attain that position where you can state that your goods absolutely conform to the label, in that they contain the exact quantity of the best obtainable drug as thereon stated. To do this you must invoke the services of the pharmaceutical chemist.

Mr. Baker reports the following as a list of crude drugs and chemicals rejected at the chemical laboratory of the Norwich Pharmacal Company during the past year.

Alum, dried	Continued marked quantities of material insoluble in water.
Ammonium Carbonate	Badly decomposed.
Benzoin	Three different lots rejected, all deficient in alcohol-soluble contents.
Balsam of Tolu	Deficient in alcohol-soluble content.
Balsam of Tolu	Contained rosin.
Black Haw	Not true Black Haw but so-called Variety Black Haw.
Short Buchu	A large percentage of stems present.
Chloroform in bottles of 100 gms.	Shortage in weight of contents, varying from 68.7 gms. to 94 gms.
Cinchonine Sulphate	Melting point low and chloroform-soluble deficient.
Calcium Hypophosphites	Solution in water decidedly opaque.
Coca Leaves	The leaves had deteriorated badly, odor musty, ether-soluble alkaloids but .09%.
Calcium Glycerophosphates	Contained appreciable amount of chlorides.
Calcium Glycerophosphates	Contained an appreciable quantity of citric acid.
Calcium Carbonate	Two lots, aluminum in excess the U. S. P. limits.
Cannabis American	Resin content low 6.5%.
Cayenne Pepper	High in ash content, total ash 9.86%. HCl insoluble ash 5.6%
Chlorophyll	Odor very disagreeable.
Cresol	Gravity low, insoluble in water as it contained tarry matter.
Hops	Rejected, as they were inferior in both color and odor.
Henbane	Assayed .15% mydriatic alkaloids which was suspiciously high
Iron Peptonate	Assayed 20% Fe^3O^3, label claimed 25%.
Iron Peptonate	Rejected on odor.
Iron Sulphate, dried	Gave moisture content of 33%.
Gelatine	Three lots rejected on account of color.
Gentian Powd.	Adulterated with foreign material.
Glycerine	Contained sulphates and color not up to standard.
Glycerine	Color not up to standard.
Guaiac	Four lots, rejected, low in alcohol-soluble content, high in ash content.
Lard	Two lots rejected on odor.
Lithium Citrate	Did not conform to the U. S. P. in purity test.
Lupulin	Five lots rejected—ether soluble content deficient—ash content high.
Licorice Root	The extract obtained had a musty taste.

Lobelia	Rejected as it was mostly stalk and but very few leaves.
Manaca Root	Spurious variety.
Mentha Piperita	Inferior in both color and odor.
Po. Gum Myrrh	Ash content high 15%.
Magnesium Sulphate	Contained the heavy metals in excess of the U. S. P. limits.
Magnesium Sulphate	Purity not up to U. S. P. standard—color also inferior.
Magnesium Oxide heavy	Contained excess of calcium.
Nux Vomica	Physical appearance of the seeds was poor—strychnine content 1.222%.
Oleic Acid	Congealing point 14° C., which is high. Notable quantities of palmitic and stearic acids present.
Oil Thyme	Color very dark.
Russian White Oil (Liquid Petrolatum)	Two lots rejected on account of turbidity.
Phenol	The crystals were off color, being quite red.
Peptone from Beef	Proteid content 71%, which is below our standard.
Pareira Brava	Spurious variety.
Paraffin	Tastes strongly of mineral oils.
Podophyllin	Two lots rejected, deficient in alcohol-soluble content and high in ash content.
Potassium Hypophosphite	Solubility in water not in accordance with the U. S. P.
Peroxide of Hydrogen	Assayed 2.8% H^2O^2—contained free acid and total solids in excess of the U. S. P. limits.
Pink Root	Contained a large amount of earth and dirt.
Gum Senegal	Contained too large an amount of wood.
Squaw Vine	Inferior in physical appearance.
Strophanthus Seeds	Very damp and musty.
Strontium Salicylate	Two lots rejected as color was decidedly pink.
Zinc Oxide	Two lots below U. S. P. standards for purity.
Zinc Valerianate	Two lots below U. S. P. standards for purity.
Vinegar	Gravity and acidity below N. Y. State requirements.

Mr. Thorburn has enclosed the following memorandum to illustrate the need of analytical work as a control in drug compounding. He states that "We have tabulated the last one hundred samples submitted to the scientific department by the manufacturing departments. These samples represent forty-six different preparations and involve about twenty different kinds of determinations such as the estimation of arsenous acid, ammonia, alkaline hydroxides, pepsin, iodine, iodides, lead, ethyl nitrite, phosphoric acid, hydriodic acid, jalap resin, alkaloids from aconite, gelsemium, ipecac, nux vomica, opium, pilocarpus, belladonna, henbane, stramonium, and extractive from various drugs.

"Of these one hundred samples fifty-one were below standard strength, thirty-two complied with the official standard and seventeen were above standard.

"Some extreme cases of deficient strength are worth noting; 2 samples of Fld. Ext. Berberis were 60% and 67% below; 2 Stramonium preparations were 50% below; Fld. Ext. Hyoscyamus varied from 13% to 39% below; Solution Iodine Compound was 47% below; 1 sample of syrup Hydriodic Acid was 50% below; Fld. Ext. Nux Vomica varied from 1% to 19% below and from 2% to 20% above; Fld. Ext. Gelsemium was 48% and 55% below.

"Few of the samples that were above strength were more than 10% above but Extract Belladonna Leaves finished 55% above standard. A number of Pepsin digestion tests gave very satisfactory results but in several cases these samples were more than 25% below standard.

"This series of samples is good evidence that no scheme or plan for the manufacture of pharmaceutical preparations is complete unless it includes the analytical testing of the article after it is compounded and most important of all, its adjustment to standard."

The Abbott Alkaloidal Company report having rejected the following supplies:

Aconite	Low in alkaloidal content.
Alcohol	Excess organic impurities.
Alum	Excess iron.
Apomorphine Hydrochloride	Excess moisture.
Arsenous Acid	Insoluble matter.
Barium Sulphide	Two shipments purity but 19 to 22%.
Calcium Chloride	30.9% water.
Calcium Carbonate	Chlorides.
Chloral Hydrate	Low melting point. Chlorides.
Corn Oil	Less than content.
Diacetyl Morphine Hydrochloride	Excess water.
Hydrastinine Hydrochloride	Excess water.
Ipecac	Low alkaloidal content.
Lanum Hydrous	Moisture.
Methylene Blue	Ash.
Milk Sugar	Insoluble matter.
Morphine Hydrobromide	Excess water.
Nux Vomica	Low alkaloidal contents.
Oil of Cajuput	Copper.
Oil of Peppermint	Dimethyl Sulphide
Papain	Digestive activity.
Potassium Permanganate	Chlorides. Sulphates.
Sodium Bisulphite	Moisture.
Sodium Silicofluoride	Purity.
Strophanthin	Reduced alkaline cupric tartrate in cold.
Talc	Iron.
Tartaric Acid	Sulphates.
Silver Oxide	Silver Chloride.
Zinc Valerate	Purity.
Sodium Salicylate	Alkaline to litmus.

We call your attention to "A Bibliography of the Deterioration of Drugs and Pharmaceutical Products" by E. G. Eberhardt and F. R. Eldred, Indianapolis, Ind., published in the January issue of the Journal of the American Pharmaceutical Association, 1914; and to the "Purity of Chemicals and Drugs" by H. Englehardt, published in the Journal, 1913, page 163.

We also recommend that you submit all compound formulas to your chemists for their approval. Such a procedure will assure you of having formulas already supposedly therapeutically balanced, further improved by their chemical and pharmaceutical adjustment. All three considerations are necessary to secure an elegant and scientific preparation.

In concluding this report the committee desire to herewith acknowledge to the Association their appreciation for the honor that has been conferred upon them through their appointment to this office.

The chairman likewise desires to thank both Mr. Baker and Dr. Thorburn for their prompt and hearty coöperation in the preparation of this report. Both of these gentlemen have herewith suggested to you, methods that are not only unique but also far superior to those in general practice today.

Franklin Peale Summers,
A. D. Thorburn,
W. L. Baker.

WATER PURIFICATION AT COLUMBUS, OHIO.*

CHARLES P. HOOVER,
CHEMIST IN CHARGE.

Perhaps few cities in the world have had so difficult a public water-supply problem to solve as did the City of Columbus, Ohio. For years, it had been the practice to pump sewage polluted water from Alum Creek and the Olentangy and Scioto Rivers, into the distribution-system of the city. Even with these sources of supply, the quantity of water available, was not sufficient, and there was constant danger during the summer and fall months of a water famine.

As has been stated, the water was polluted with sewage, and was at times extremely muddy, and, as the water-sheds of the above-mentioned streams are underlaid with limestone rock, the water passing over and through this limestone was very hard. The hardness was so excessive that the water was not satisfactory for domestic or commercial uses. It would not lather freely with soap, and, when used for boiler-feed purposes, it was very injurious to the boilers, due to the large quantity of scale deposited on their tubes. The water was so impure, that severe epidemics of typhoid fever were of frequent occurrence, and Columbus was recognized as having perhaps as high a typhoid-fever death-rate as any large city in the United States. In 1904, just a year previous to the time that work was started on the improved water supply, the typhoid-fever death-rate of the city was 139 per 100,000, a disgrace to any American municipality.

After heavy rains, the water was so turbid or muddy that it was almost impossible to use it for any purpose. The reader will perhaps realize how muddy the river-water really is, by knowing that, after heavy rains, as much as one hundred and twenty-five tons of mud are removed from a day's supply of water before it is pumped to the consumer.

The Storage Dam:—In order to provide a sufficient quantity of water, a dam was built across the Scioto River about five miles above the city. This dam is a concrete structure 1006 feet long and thirty feet high. The reservoir formed by the construction of this dam, across the river, is 5.8 miles long, has an average width of 500 feet, and its capacity is 1,720,000,000 gallons.

The dam is located about 4.5 miles from the Purifying and Softening Works, and it was planned to build a gravity-conduit from it to the Purification Works but no money was appropriated for this work, therefore, the river is used as a conduit; the water flowing down the river from the dam to the Pumping Station. The water is then pumped from the river to the Purification Works, and is softened and filtered, then pumped into the distribution-system.

The Water Purification Works:—These are designed for softening as well as filtering the water, and on account of the extremely variable characteristics of the untreated water, great elasticity was sought in their operation.

*Delivered before the Columbus Branch, December 9, 1914.

The plant comprises primarily:

1. A lime saturator, composed of six tanks, each twenty-five feet square, in which the chemical reactions begin.

2. Two Baffled Mixing-Tanks, each two hundred and four feet long, twenty-five feet wide and twenty feet deep.

3. A settling basin divided into six compartments with a total capacity of fifteen million gallons, in which the greater part of the turbidity and precipitated materials are removed by sedimentation.

4. Ten mechanical filter units, each with a net filtering area of 1089 square feet.

The above have a normal rated capacity of thirty million gallons per twenty-four hours and in addition there is:

5. A covered, filtered-water reservoir holding ten million gallons.

Included in the plant there are also a storage-house for chemicals and a Head House, in which is placed the equipment for dissolving and feeding the lime, soda-ash and coagulant into the water. The chemical and bacteriological laboratories are also housed in this building.

Purification with Alum:—When sulphate of alumina is added to a muddy, alkaline water, the aluminum combines with the alkalinity of the water, and a flocculent, gummy, gelatinous precipitate of aluminum hydroxide is formed. This precipitate entrains the mud and bacteria, and all suspended particles present in the water, and being heavy soon settles. This settling-process, or sedimentation, takes place in large, concrete settling-basins from which the material which settles from the water is washed back into the river, below the in-take.

Only minute quantities of alum are required to properly coagulate the sediment. From one to two grains of alum to a gallon of water, is usually sufficient, unless the water is extremely muddy; then as much as four grains is sometimes required.

There are seven thousand grains in a pound, so that one grain per gallon, is equivalent to one pound in seven thousand gallons of water. Even this small quantity does not remain in the purified water, because, as has already been explained, the alum is precipitated and settles out of the water with the mud and other impurities.

Softening Water:—Lime and soda ash are used to soften the water, and during the year 1912, the total hardness of the river water averaged two hundred and twenty-two parts per million, whereas, the average total hardness of the filtered water was only seventy-nine parts per million. At first, the consumers felt that the use of chemicals for softening and coagulating the water, would not be desirable, and had some hesitancy in using the chemically-treated water. This prejudice has been entirely overcome and the people are now beginning to realize that there is less chemical in the filtered water than there is in the untreated river water. The reason that there is less chemical in the filtered water than there is in the river water, being, that the chemicals which are added to the water, in order to soften and coagulate the impurities, combine with the soluble carbonates and sulphates present in the water and form insoluble compounds, which are removed from the water by sedimentation and filtration.

The following paragraph will explain more fully the nature of lime and the reactions which take place when it is added to hard water.

Lime is made by burning limestone in a kiln. Pure limestone has the chemical

formula $Ca\,CO_3$ (Calcium Carbonate). When this is burned, the following reaction takes place:

$$\underset{\text{Calcium Carbonate}}{Ca\,CO_3} + \text{burning} = \underset{\text{Lime Oxide.}}{Ca\,O} + \underset{\text{Carbon Dioxide.}}{CO_2}$$

The difference, therefore, between limestone and lime is that the calcium of the limestone is combined with CO_2 (carbon dioxide) as a carbonate, and, in burning, the carbonate is broken down, carbon dioxide passing off as gas, leaving the calcium combined with oxygen as an oxide (Ca O).

Lime has a great affinity for carbon dioxide, and when it is exposed or comes in contact with carbon dioxide, the carbon dioxide is immediately absorbed and the lime is converted back to its original state, that is, limestone or calcium carbonate.

All natural, hard waters contain free and half-bound carbon dioxide, and it is the presence of this carbon dioxide, in water, that enables the water to dissolve and to hold in solution, large quantities of limestone.

It is a well known fact, that if hard water, that is, water containing lime carbonate in solution, is boiled, the CO_2 (carbon dioxide) which it contains, is expelled, and a deposit of lime forms in the bottom of the vessel in which the water is boiled, demonstrating that the limestone is not soluble in water, only in the presence of CO_2.

When lime is added to hard water, it absorbs the carbon dioxide present in the water, is, itself, converted back to limestone, and as limestone is not soluble in water in the absence of CO_2, it settles out of solution along with the mud and other impurities. The limestone originally present in the water, also is precipitated and settles out of solution as soon as the CO_2 is absorbed by lime, therefore, the lime added to the water, as well as the limestone originally present in the water, is removed, and the water contains less chemical or mineral matter than it did in its natural condition, and is therefore softer.

Lime will not remove sulphate-hardness, therefore, this condition is removed by precipitating it with soda-ash (sodium carbonate).

It has been learned at the Columbus plant, that the addition of lime not only softens the water, but that the typhoid and other intestinal bacteria, will not live in lime-softened water, because the lime absorbs the carbonic acid from the water, and these disease-producing bacteria will not live in water free from carbon dioxide.

If lime-softened water be inoculated with typhoid organisms, they will die out in a period of twenty to twenty-four hours, and if the water be softened to the lowest possible figure with lime, and an additional quantity of lime added, sufficient to introduce a small quantity of excess lime, the sterilization is accomplished in from four to five hours.

Brief Description of Process:—The water is measured, through Venturi Meters, as it enters the water-softening and purification works. Lime, and soda-ash are added to it in the proper proportions to soften it, and sufficient alum to properly sedimentize it, which are determined by two hour chemical determinations. After the chemicals are introduced into the water, the water so treated, is then passed through long mixing-tanks, where the chemicals and water are thoroughly mixed, and the chemical reactions take place. From the mixing-tanks the water passes

into settling-basins, and the mud, bacteria and precipitated limestone are deposited. Practically all of these impurities are removed by sedimentation, but, in order to remove all suspended particles, the clear water from the settling-basins is passed through sand filters. The water passes through the sand, into a large covered concrete reservoir; and from this reservoir is pumped to the distribution system.

Purity of Filtered Water:—Columbus has now one of the most modern, fully-equipped water purifying systems of the world.

The water delivered to the consumers is satisfactorily soft, is always sparkling-clear, has a wholesome taste, and is absolutely pure.

During the year 1912, the average number of bacteria present in the river water was nineteen thousand two hundred and ten per cubic centimeter, and the average number in the purified water was only fourteen per cubic centimeter, a reduction of 99.93%. Another evidence of the purity of the water, is the decrease in the typhoid-fever death-rate, which has fallen from one hundred and thirty-nine in 100,000, to about eighteen in 100,000.

THE RELATION OF PHARMACY TO MEDICINE.

ALBERT H. DEWEY, PH. G., B. S., M. S.

Historically, pharmacy and medicine had a common origin. If we would advance the contention that pharmacy is the mother of medicine, we must at the same time admit that the parent is subservient to its offspring. However that may be, the fact remains that, somewhere in the past there arose the necessity for a separation of the two professions. This necessity was undoubtedly an economic one, which had it foundation deep-rooted in the very nature of the two professions.

The ancient pharmacist, who spent his time in collecting and curing drugs, of both animal and vegetable origin, and making, from these drugs, the various preparations required in the treatment of disease, could not become very highly proficient in the diagnosis and treatment of human ills, crude and imperfect as these arts may have been at that time. Conversely, the physician, who devoted his time to attendance upon and treatment of the sick, had not the time to become skilful in the recognition of the growing plants used in medicine, nor in the art of their preservation and preparation for use.

Hence, the separation of the two professions, was one of the mighty factors that made for the increased efficiency of both. And, right here, it might be pointed out that the more skilful and efficient a physician became, through a conscientious devotion to his work, the more he stood in need of the services of a skilful and efficient pharmacist, while the pharmacist's profession depended wholly upon that of medicine. This mutual inter-dependence of the two professions, without doubt, increased the efficiency of both and its re-establishment in

modern times for the sake of increased efficiency is one of the important questions confronting these two sister professions to-day.

On down through the ages, this division of labor in the interests of economy and efficiency has continued, until to-day we live in the greatest age of specialization the world has ever known.

One factor which has influenced this evolutionary development in pharmacy, more than in medicine, is modern business organization and the influence of large combinations of capital. From the very natures of the two professions, this fact is more applicable to pharmacy than to medicine. For example, a large manufacturing-establishment can make a thousand gallons of a given preparation better and more economically than a thousand individual pharmacists can make a gallon apiece; but neither the application of modern business principles, nor large combinations of capital have yet devised a machine which will perform a thousand appendicitis-operations collectively, more economically or more efficiently than a thousand such operations can be performed individually.

Because of this influence of modern business organization, the processes of pharmaceutical-manufacturing have practically passed out of the hands of the individual pharmacist. And long ago, because of the area from which drugs are collected, market-conditions, and a differential-price for labor, the collection and preservation of drugs had passed out of his hands.

What then remains, at present, as the pharmacist's work? "Compounding and dispensing," if we apply ordinary subtraction to our time-honored definition and scan not too closely the forces that are even now grasping for these.

It is admitted on every hand, that the gross income from the compounding and dispensing of physicians' prescriptions in the average drug store to-day does not exceed ten *per cent.* of the total gross income. The other ninety *per cent.* comes from the commercial end of the drug business, which is, largely, retail merchandising-operations, into which the pharmacist has entered in order to earn a livelihood.

In this connection, it might be pointed out, that the same natural law, which made it impossible for the ancient pharmacist to become proficient in the art of healing the sick, because he devoted his time to the collection and preservation of drugs and their preparation for use, to-day makes it impossible for the pharmacist to become skilled in the real work of pharmacy, because he is assiduously devoting his time to side-line merchandising, bargain-store methods, advertising, window dressing, etc., etc.

This brings up the very important question,— "What is the real work of pharmacy to-day?"

Even as the ancient pharmacist, by intelligent assistance, made the ancient physician more efficient in his work, so it should be the real function of the modern pharmacist, by intelligent assistance, to make the modern physician more efficient in the work that he is endeavoring to do.

With the remarkable amount of research that is constantly being carried on in the field of medicine, there is, inevitably, a broadening of, and in many cases, fundamental changes, in our knowledge of the nature and cause of disease. This progress and development in medical knowledge, mean corresponding changes and progress in the treatment of the disease.

Not many years since, if the physician desired an infusion or decoction, an ointment or emulsion or pill or any thing else, well prepared, for the treatment of a patient, he turned to his reliable helper, the pharmacist, and received an efficient and potent preparation. To-day if he desires a blood-count, a urinalysis, a gastric- or fecal-analysis, an autogenous vaccine, a Widal or Wasserman test, or any one of a long list of things, which the physician in most cases must delegate to some one else, does he turn to the pharmacist? And if not, why not? Simply because the pharmacist of to-day is neither equipped, nor prepared, nor competent, to do this kind of work. He is too busy selling tin watches and sugar-coated prunes: his mind is on the weighty problems of how to compete with the chain-store or the copy for his next week's cut-rate advertisement. While the physician has been learning new facts about disease, leading to new methods of treatment, the pharmacist has been adding side-lines. There is no reflection in pharmacy of the changes and progress occurring in medicine.

As before indicated in this paper, a man becomes most efficient in that to which he devotes his time, his energy, and his attention. The commercial pharmacist who devotes his time and attention almost wholly to the problems of the business world, can be of but little professional assistance to the physician. The physician who devotes himself to his practice, cannot continue to be an efficient and reliable laboratory-worker, and yet this laboratory-work must be done and done well, if the physician is to do full justice to his patient and to himself.

There are many things in the diagnosis and treatment of disease to-day that, for a variety of reasons, the average modern physician cannot do for himself, but must delegate to some one else to do for him. Who is to do this,—the physicians' "delegated work"? We may admit that the physician who has at his command the services of an educated, experienced, competent, reliable laboratory-worker, in a thoroughly equipped laboratory, is a far better and more efficient physician than he would be without such assistance. If we admit, also, that such a laboratory-worker will increase the efficiency, not only of a given physician, but of every physician who will avail himself of the opportunities of such assistance, then we may catch a glimpse of the tremendous uplift that such a class of men could give to the medical profession.

Nobler, holier, more useful work was never entrusted to human hands than the medical profession is doing to-day in its efforts to stamp out human disease. To have had part, however humble, in such a work, is a rare privilege and worthy of any man's ambition and his life's best efforts. And yet, we find this field almost wholly unoccupied, with not a single university, or college of medicine, or college of pharmacy, fitting its graduates to do this most useful, necessary and important work.

This feature of the situation could undoubtedly be overcome, but another feature, less easily provided for, is the question of legal registration for the practice of such a profession.

I believe it is an indisputable fact, that the men now registered as pharmacists or those who may hereafter become registered under our present pharmacy laws, are not and will not be qualified for this kind of work. Graduates of our pharmacy colleges are not excepted in this statement.

The purpose of registration as a legal pre-requisite for the practice of any

profession, is, we may assume, two-fold in its nature. First, it would protect the public against incompetent and inefficient practitioners, and second, it would protect the qualified practitioner against the unjust and unfair competition of the unqualified practitioner.

If it is ever hoped to raise up a reliable and competent class of professional men who are capable of being a real help to the medical profession, the individual must have the protection of registration upon a plane high enough to actually protect him against the competition of unqualified men.

Elsewhere I have referred to the pharmacist of to-day as a commercial pharmacist and I should like to make clear, my idea of the distinction between the commercial pharmacist and the professional pharmacist. The commercial pharmacist practices a kind of pharmacy which is wholly independent of the medical profession, while the professional pharmacist practices a kind of pharmacy which is wholly dependent upon the medical profession. To be sure, these two kinds of pharmacy are hopelessly mixed in the drug store of to-day and, united with them, is a miscellaneous lot of retail merchandising, that bears no relation *whatever to any kind of pharmacy.* But the fundamental distinction between commercial and professional pharmacy, is their relationship to the profession of medicine. Whether professional pharmacy,—and that means the physicians' delegated work, and, practically, that means the prescription-business,—can ever be separated from the "hodgepodge" we now call the drug business, is a question, but it, undoubtedly, belongs with the rest of the physicians' delegated work, in the hands of a well-educated, well-equipped, competent, reliable man, who for lack of a better term, we may call a professional pharmacist.

ATROPA BELLADONNA.*

BERTHA OTT, PHAR. B.

History:—Atropa Belladonna is the subject of many legends and how it came by its name is interesting to know. Atropa (Greek, Atropos) was the eldest sister of the Three Fates, who were worshipped by the ancient Greeks and were supposed to preside over accidents and events; to determine destiny; and the period of human life. Their names were Clotho, spinner of the thread of life; Lachesis, the second, who twisted it and under whose fingers it was made now strong, now weak:—

"Twist ye, twine ye! even so
Mingle shades of joy and woe.
Hope and fear, and peace, and strife,
In the thread of human life."

Atropos, the third sister—"the inflexible," the fate that cannot be avoided—armed with a pair of shears remorselessly cut short the thread of life. Belladonna from the Latin (Bella) Handsome, (Donna) Lady—so named because Italian

* Read before the Cincinnati Branch A. Ph. A.

ladies used a cosmetic made from the berries, and the Spanish ladies used preparations made from this plant to dilate the pupils of their brilliant eyes.

In many parts of Southern and Central Europe and in some parts of Asia, flourishing in shady places, growing by old walls or thriving amongst rubbish heaps—may be found this herbaceous, perennial plant, of the Solanaceæ family, three to five feet high, known as the "deadly nightshade." It has merited its ominous name from the dire effects it produces on any human being who ventures to eat any portion of it.

The wide-spread distribution of the plant made its properties known to the inhabitants of most countries, and although no definite mention of it can be traced in ancient literature it is reasonable to suppose that it was well known to ancient peoples. Theophrastus, the pupil and successor to Aristotle, describes under the name Mandragora, a plant closely resembling belladonna, and Dioscorides is said by some to mean the same herb in the plant he names Strychnos-manicos.

There can be no doubt that its poisonous properties were utilized in the good old days—though seldom referred to as a remedy. For the past two centuries it has been pretty regularly mentioned by all those who wrote comprehensively on medicine, and more or less used, but never so common until its usefulness in the examination and treatment of the eye, opened for it a new and important field. It has been a panacea among Homeopaths and a specific with the Eclectics since the foundation of their schools. In "regular medicine" belladonna has a more recent introduction, due to the well-known pharmacist, Mr. Peter Squire, of London, who about 1860 commended it as the basis of a useful liniment, for the relief of neuralgic pains. At the present time it is considered one of the most important items of our Materia Medica.

Description:—The plant flowers in June and July. In September its livid, purple, bellshaped, flower gives place to shining, purple black fruits or berries, luscious in appearance and sweet to the taste. These berries have been eaten by children while playing in fields and lanes and in most instances with most unfortunate results. All parts of the plant are active. The parts directed for use by the U. S. and Br. Pharmacopœia are the leaves and the root. Leaves should be collected when the plant is in flower, roots from plants three years old or more, collected in autumn. Leaves which have been kept long should not be used, as they undergo changes through absorption of atmospheric moisture, emitting ammonia and probably losing a portion of their nitrogenous matter.

Our U. S. P. directs us to use leaves of the following description: "Usually of a dull-brownish color, the leaves much wrinkled and matted together, frequently with the flowering tops intermixed; leaves from 6 to 20 cm. long; 4 to 12 cm. broad; broadly ovate; apex acute; margin entire; narrowed into the petiole; upper surface brownish-green, lower surface grayish-green; epidermis more or less papillose; particularly on the under side, odor distinctly narcotic, especially on moistening; taste somewhat bitter and acrid. The powder is characterized by few hairs and numerous, small arrow-shaped crystals of calcium oxalate. Leaves when assayed by the U. S. P. process should yield not less than 0.35% of mydriatic alkaloids. The dried roots of not less than 0.5% of mydriatic alkaloids.

Roots described as follows: Of cylindrical or somewhat tapering, longitudinally, wrinkled pieces 1 to 2.5 cm. thick, the bark somewhat incurved at the edges of roots, which have been split before drying; externally brownish-gray, dusty or mealy; outer layers of the periderm rather soft; frequently abraded and thus showing lighter patches; fractures nearly smooth, mealy and emitting a characteristic puff of dust; internally whitish; the older roots showing medullary rays near the bark; nearly inodorous; taste sweetish; afterwards bitterish and strongly acrid. Roots that are shrunken, spongy, dark-brown and free from starch should be rejected as also old woody roots and stem-remnants. Microscopical examinations of belladonna root shows bark rather thick, free from bast fibers, composed almost entirely of parenchymatous cells, more or less filled with starch grains and calcium oxalate raphides.

In various parts of Europe both the leaves and the root of belladonna are adulterated with the similar products of a Phytolacca, which has been variously supposed to be the Phytolacca Decandra of North America, which has become naturalized in Southern Europe. The leaves and general appearances resemble those of belladonna, but are to be recognized by their upper surfaces being without hairs and brighter than in the belladonna plant. The dried phytolacca root resembles superficially that of belladonna, but may readily be distinguished by the epidermis not being easily abraded with the finger nail. The histology of the root is characteristic, the raphides are acicular instead of being as in belladonna, sandy crystals, and the root itself is generally characterized by the alternating distinctly separate rings of wood and bast tissue.

Attention has been called to the species of Scopola, a genus connecting atropa and hyoscyamus as resembling belladonna. The rhizomes of the Scopola Carniolica are very similar to the roots of belladonna, the bark, however, of the former is less thick. Scopola Japonica (Japanese Belladonna) was found to be similar to Scopola Carniolica. This drug is official under Scopola.

Active Principles:—The active principles upon which the medicinal repute of belladonna depends are atropine and hyoscyamine-alkaloids possessing the same chemical formula ($C_{17}.H2_3.NO_3$), but differing somewhat in therapeutic properties. The close connection of the alkaloids suggest that it would be difficult to obtain one free from the presence of the other, and as a matter of fact, the official atropine allows a small amount of hyoscyamine. The melting points of these two alkaloids differ—the most reliable test, however, is dependent upon the fact that while a solution of hyoscyamine is capable of rotating the plane of polarisation of a ray of light to a considerable degree, pure atropine is optically inactive. Investigations undertaken at the request of the Schering manufactory to determine why the proportion of hyoscyamine and atropine in a root seems to vary with the method of working, reached the surprising conclusion that the optically active hyoscyamine can be changed into the optically inactive atropine under a variety of circumstances such as fusion, action of weak soda solution (even at ordinary temperature), and of ammonia. Other existing alkaloids of belladonna are belladonnine hyoscine and atropamine, besides the usual vegetable constituents, such as albumen, gums, etc., and a coloring principle named atrosin. Belladonna has been studied by Vanquelin and many chemists after him, but it was not until 1833

that atropine in a state of purity was isolated from it. This was accomplished simultaneously by Geiger and Hess, two German chemists, and Mein, a German pharmacist.

Preparations:—Pharmaceutical preparations of the leaves are Extract Belladonna and Tincture Belladonna. From the extract we prepare the U. S. P. plaster and ointment. The extract is also a constituent of Co. Laxative Pills, and of Podophyllum, Belladonna and Capsicum Pills. Of the root we have Fl. Ext. Belladonna and Belladonna Liniment. Other official products are Atropine, Atropine Sulphate, Oleate of Atropine and Homatropine Hydrobromide.

Uses:—Belladonna is one of the most useful agents in the materia medica, ranking high in its efficacy and its wide range of usefulness. The most important uses of atropine or belladonna are:— (1) In the form of a belladonna plaster or liniment atropine or belladonna, it is used to relieve pain on the area where it is applied. (2) As a cardiac and respiratory stimulant especially where immediate effects are desired. (3) As an antidote for morphine poisoning, and it is often given with morphine to avoid poisonous effects. (4) Atropine is used to dilate the pupil, so that the retina or background of the eye may be more easily examined and to prevent adhesions between the iris and lens, when the iris is inflamed. (5) Atropine is often given to check secretions, for example, profuse perspiration, etc.

Symptoms of Overdoses:—Symptoms of overdoses are dryness of the mouth and throat; redness and dryness of the skin, pulse and breathing rapid; pupils widely dilated; great restlessness, followed by delirium. The delirium is peculiarly wakeful, active and talkative, the excessive excitement is followed by a deep sleep, which gradually becomes deeper (stupor).

Antidotes:—As antidotes give evacuants (emetics and cathartics), tannic acid; keep body warm; give artificial respiration if the breathing is embarrassed. Give heart and respiratory stimulants, such as whisky, caffein, strychnin, etc.

A recent writer on Materia Medica advises us *not* to give morphin, for while atropin is the antidote for morphin, the dangerous effects of atropin are due to the exhaustion of the breathing. If morphin is given in such cases, the breathing is only made slower. Morphin, therefore, is not an antidote for atropin, though atropin is an antidote for morphin.

Cultivation:—Having reviewed this most interesting plant, let us, but for a few moments consider its cultivation. Until recently the manufacture of belladonna preparations was carried on exclusively with wild plants, gathered in a somewhat haphazard fashion by herb collectors. When the scientific cultivation of medicinal herbs on a large scale was introduced, many critics declared that wild belladonna was superior in alkaloidal strength to that of the cultivated variety, but manufacturers at home and abroad, upon investigating, have shown that this fear is groundless, results showing that a plant of much greater alkaloidal strength than what our U. S. P. demands may be obtained.

Since belladonna is not an indigenous plant, present war conditions have opened our eyes, as to the future supply, and great necessity of home production or cultivation of this plant, and we are glad to note what is being done to conserve this wonderful drug. Pioneer among those who have introduced the scientific cultivation of belladonna in the U. S. are Johnson & Johnson of New Brunswick,

N. J. Their experiments have led the way to a higher grade of belladonna, to any that has heretofore been known. Their farms comprise fourteen acres, at the above-mentioned city, a fairly large one at Conshohacken, Pa., near Philadelphia, and forty acres at Salinas, Calif. The work of Johnson & Johnson in the culture of the belladonna plant, has aroused worldwide interest, and this interest is just now being revived. During the years which have passed extended experiments have been made as to the influence of soil, climate, fertility upon the plant and the yield of the alkaloid. The researches of Johnson & Johnson upon the cultivation of belladonna in the United States have been most varied and extensive, a considerable amount of which has been published for the benefit for all interested therein. Incidentally it might be mentioned that this work is enormously extensive and as yet they have not been able to supply their own demands. But they are glad to make their contribution to American materia medica, and they believe the experience they have gained by the contribution to the knowledge of such an important plant as belladonna will compensate them for their outlay. We hope that in the near future their efforts may be rewarded with an abundant supply of this drug so as to also make a financial success. By coöperation with other nations the U. S. Department of State, through its consulate service and the Department of Agriculture, through its Bureau of Plant Industry, bring out and put at our disposal much valuable information about the growing of foreign plants.

Among others the U. S. Department of Agriculture at the Arlington Experimental Farm, Virginia, is carrying on interesting work in regard to the breeding of plants, in order to obtain a type of belladonna plant, fairly constant in the yield of its alkaloids. Observation work is also carried on by Parke, Davis & Co. of Detroit, Mich., Eli Lilly & Co. of Indianapolis, Ind., and a firm of Glenolden, Pa.

Among the schools of pharmacy which have undertaken the cultivation of medicinal plants so as to facilitate and make more comprehensive the study of pharmacy and pharmacognosy, we would mention the Minneapolis College of Pharmacy and the Philadelphia College of Pharmacy.

We consider the appeal to pharmacists by Mr. Kilmer, in the October issue of the "Practical Druggist," should receive deep consideration where he says:— "It is the duty of the pharmacist to supply the materia medica needed for the alleviation of disease, and especially those which he can grow or otherwise produce for himself. If we could thus multiply and extend the cultivation of medical plants among the thousands of druggists in the United States, we would soon find ourselves independent of other sources of supply."

"Here, then, is our opportunity and our duty to protect and conserve the supply of drugs and medicines against existing influences and such as may come upon us in the future." In fulfilling our duty we will be able to supply ourselves with a quality of crude drugs which will yield for us the purest and best preparations.

Bethesda Hospital, Cincinnati.

THE WAR AND DRUG IMPORTATIONS.*

HARRY B. FRENCH, PRESIDENT SMITH, KLINE & FRENCH CO.

When war broke out between the European nations, commerce for a time was paralyzed. There were hundreds of German ships on the high seas as well as a number of Austrian ships. These vessels were all liable to capture as soon as they left neutral waters. Up to that time they had been doing a very large portion of the carrying trade, especially from China and Japan and from Germany to North and South America. Moreover the ships of the *Triple Entente* were not safe so long as there were a number of German cruisers scattered over the different parts of the world. That these cruisers have given a good account of themselves is shown by the fact that there have been nearly two hundred vessels of the *Triple Entente*,—that is vessels belonging to France, Russia and England,—that have been captured.

The immediate result of the breaking out of the war was the seizure of many of these vessels in transit, the holding up in the ports of one of the belligerents of merchant vessels belonging to an enemy, and the detention in neutral ports of many other vessels. This for a considerable time prevented the forwarding and the delivery of the merchandise, and produced for the time being a great scarcity of goods.

After a few weeks it was found that merchandise could be imported, though roundabout routes had to be taken, but there were great delays in shipments, and the goods were still liable to seizure by an enemy. German chemicals in considerable quantities were shipped through Switzerland and from the Port of Genoa, and through Christiana, Sweden, Copenhagen, Denmark, but mostly through Rotterdam. Crude drugs came more largely through the southern ports of Europe.

At the present time most of the heavy chemicals can be bought at prices almost as low as prevailed before the war, but the goods must be paid for by sight draft. Crude drugs in many cases can be bought at lower prices than before the war, but there is great difficulty in obtaining shipments, owing to the difficulty in making payments. In many cases the money has to be sent abroad and trusted to the honesty of the shippers. For instance, in having goods shipped from Trieste, we found it necessary to have our bankers here cable the money to a correspondent in Milan, Italy. The correspondent sent the money to the merchant in Trieste. This method is not entirely acceptable because it places the buyer entirely within the hands of the seller, besides being expensive in other ways.

The position has been complicated in recent weeks by the entrance of Turkey into the war. This directly affects such articles as Opium, Tragacanth, Aleppo Nutgalls and Colocynth from Syria, and it also affects Gum Arabic from Egypt. The effect on Gum Opium has been lessened by the large stocks held in this country in bond, and by the fact that Persian gum can be substituted for manufacturing purposes. If, however, there should be a Mohammedan uprising, all these

* Read before the Philadelphia Branch at its December meeting.

articles would be even more seriously affected, as well as many others. As it is, Persia is now in a very disturbed state.

If the war continues it is thought there will be a material advance in the price of Gum Opium and there should be also a corresponding advance in the price of its derivatives, especially Morphine and Codeine. Shortly after the Turkish war broke out and when it was fully expected that Morphine and Codeine would advance, the prices were reduced. This was a very unfortunate step, for the reason that it lessened the value of the stock on hand of all dealers in Morphine and Codeine, all tablets and pills and other preparations made from these salts. The reduction was not based on conditions or on supply and demand, but simply and solely from an antagonistic feeling that had grown up between certain powerful manufacturers. From the consideration of this unjustifiable action, dealers must reach the conclusion that they cannot base their operations on the ordinary laws of trade, such as supply and demand, as such laws may be affected by the war conditions, but they must also take into consideration the jealousies of different manufacturers, who evidently will not hesitate to cause much loss to their customers and will not hesitate to make it impossible for such customers to use their business experience and sagacity. We have no hesitation in condemning this reduction in the price of Morphine and Codeine as unjustifiable, either on the grounds of policy, of conditions, or of morals.

At the present time, it is somewhat easier to obtain goods and they are coming here in larger quantities, but there are such uncertainties and delays in shipments that at one moment the market is flooded with arrivals and later is bare of stock. In many quarters it is thought that the chemicals and the crude drugs that are being shipped to this country are from accumulated stocks, and that later when these stocks become greatly depleted, much higher prices will prevail. This is undoubtedly true of some goods, but it is hard to tell whether it will apply generally. For instance, a remark was made some time ago that Germany had a population of sixty-five millions of people and that about five millions of these had been taken from their ordinary occupations. This, however, left sixty millions of people to carry on the work of the sixty-five millions. Of the five millions taken from their occupations, many of them were trained for special work and their places cannot be filled. You must remember, however, in Europe the women are accustomed to work and it is problematical how much of this work left undone by the five millions taken away, can be done by the sixty million people. The writer's opinion is that if the channels of trade are free from hindrances such as now prevail, that merchandise, whether in the form of manufactured products or of crude drugs will be obtainable to a greater or less extent. Every month, however, that the war is prolonged must increase the economic loss, resulting from the increased destruction of men, of countries ravished by the contending armies, and also from the cessation of productive work. It is probable that the next two or three years this country will see great prosperity, as the demands of the combatants upon the resources of this country will be greater than formerly, and they must be paid for, however great may be their deprivation in other respects. It is certain, however, that no such tremendous

loss of life and material can take place, as has now taken place in Europe, without disastrous results being felt by every country in the world for many years to come, though it may be two or three years before the reaction begins to be felt in this country.

At the breaking out of the hostilities, the question of method of conducting our business had to receive immediate consideration. There were two methods to be pursued. One method was to hold down prices but to refuse to fill orders, or to fill only a very small percentage of orders. The other was to fill all orders that came into the house and advance prices so far as might be necessary because of the increased cost of replenishing stock. This last course was the course followed by the house I represent. Our thought was that we were in business for filling orders of our customers at the market prices. For instance, the manufacturers did not advance their price beyond 70 cents per pound for Citric Acid, but could only fill a very small portion of the demand. The larger portion of Citric Acid sold by houses like ourselves was bought from second hands and imported from Europe. At one time the price advanced in Philadelphia as high as $1.35 per pound and in New York to $1.85 per pound. Large buyers paid as high as $1.20 or more in order to fill such orders. Some unjustifiable criticism was raised by this course of procedure by those houses that quoted prices but refused to deliver goods. There were certain manufacturing houses that sent their price lists all over the country quoting low prices for their chemicals and absolutely refusing to sell a dollar's worth of many of the articles that they quoted. This produced a great deal of confusion and unjustifiable recrimination. Some wholesale druggists quoted low prices throughout the country on articles like Citric Acid, but when they received an order for five or ten pounds would send one pound only. Their prices, therefore, did not represent the market, as the market price is the price that will obtain the goods.

The rulings affecting shipments abroad are very interesting. For instance, our Government has taken the position, as I understand it, that any nation can give its own definition of contraband and act upon that definition. That if the Government of the United States should ship contraband goods to a belligerent, it would commit a hostile act against the enemies of that particular power. That if an individual should make such a shipment, he would also commit a hostile act against the enemies of the power to whom he made the shipment. The Government, however, is not compelled to restrain such shipments, but if such shipments are seized, the shipper cannot claim the protection of the Government. I think possibly that many citizens have wondered why it is that this Government permitted England to stop ships, flying an American flag or a neutral flag, on the high seas, condemn certain portions of their cargo and take them into their own ports. It will be interesting to remember that a British ship, sailing from England to the Island of Nassau, one of the British possessions, was seized when about 150 miles from Nassau, during the War of the Rebellion, by an American man-of-war and was condemned by a prize court in New York City. Later the vessel was released, but the cargo was condemned as being ultimately destined to the Confederacy. Our Government acted on the principle that the ultimate destination of the cargo was the point at issue, and that this was not affected by the fact

that the cargo might be shipped first to a neutral port and transferred by several different vessels. Apparently England and France have the right to declare anything contraband that they may wish, but they are probably restrained because of the danger of inciting hostile feeling in this country.

The following prices have been taken from "The Oil, Paint and Drug Reporter" of New York. We give the prices of the articles mentioned before the war, on September 1st and on December 1st. This table shows some of the variations of prices:—

	Before War.	September 1st.	December 1st.
Atropine Sulphate	$ 8.00 oz.	$35.00 oz.	$18.00 oz.
Salicylic Acid	.25 lb.	1.15 lb.	.70 lb.
Adeps Lanæ, Hydrous	.17 lb.	.80 lb.	.22 lb.
Tartaric Acid	.30 lb.	.75 lb.	.42 lb.
Citric Acid	.55 lb.	1.25 lb.	.60 lb.
Salts of Tartar	.08½ lb.	.25 lb.	
Potash Permanganate	.10 lb.	.75 lb.	.14 lb.
Quinine	.26 oz.	.31 oz.	.26 oz.
Cod Liver Oil	19.00 bbl.	29.00 bbl.	20.00 bbl.
Benzoic Acid	.26 lb	2.00 lb.	.40 lb.
Quicksilver	.54 lb.	1.10 lb	.75 lb.
Juniper Berries	.03½ lb.	.22 lb.	.04½ lb.
Camphor, Japanese	.42 lb.	.95 lb.	.44 lb.
Hyoscine Hydrobromide	21.00 oz.	120.00 oz.	43.00 oz.
Canary Seed	.06 lb.	.14 lb.	.07 lb.
Celery Seed	.20 lb.	.40 lb.	.16 lb.
Japan Wax	.10½ lb.	.22 lb.	.10½ lb.
Belladonna Leaves	.60 lb.	2.25 lb.	1.10 lb.
Dandelion Root	.15 lb.	.70 lb.	.25 lb.
Cumarin	3.10 lb.	12.00 lb.	3.25 lb.
Hydrochinone	.51 lb.	8.00 lb.	1.50 lb.
Potash Bromide, Gran	.37 lb.	.74 lb.	.74 lb.
Carbolic Acid	.08½ lb.	.70 lb.	.55 lb.
Caustic Potash	.05 lb.	.32 lb.	.08 lb.
Potash Prussiate, yellow	.13 lb.	.30 lb.	
Homatropine Hydrobromide	42.00 oz.	135.00 oz.	85.00 oz.
Phenolphthalein	1.05 lb.	2.00 lb.	1.25 lb.
Sodium Cacodylate	3.50 lb.	18.00 lb.	6.00 lb.
Thymol	1.80 lb.	12.00 lb.	5.50 lb.

REVIEW OF CURRENT PHARMACEUTICAL LITERATURE.*

FREEMAN P. STROUP, PH. M.

The abstracts herewith given are from the November numbers of several publications and are few in number, for, much to the writer's surprise, he found very few original articles of much real interest to the average pharmacist, that might be considered as being at all scientific. There were many articles on commercial topics and of academic interest, and many of the journals had reprints

* Read at the December meeting of the Philadelphia Branch.

of excellent papers, and a considerable number contained a large number of abstracts from excellent articles, some from foreign and others from domestic journals.

MERCK'S REPORT.

Objectional Labeling for Medicinal Preparations:—The U. S. Department of Agriculture, through the Bureau of Chemistry, has issued a number of suggestions to makers and proprietors of medicinal preparations to be followed by them in avoiding conflict with the provisions of the amended Food and Drugs Act, and has given examples of the kind of advertising that would bring them into danger of prosecution as violators of the law. Some of the suggestions follow:—

"A preparation cannot be properly designated as a specific, cure or remedy, or recommended as infallible, sure, certain reliable or invaluable, or bear other promises of benefit unless the product can, as a matter of fact, be depended upon to produce the results claimed for it."

"Not only are direct statements and representations of a misleading character objectionable, but any suggestion, hint or insinuation, direct or indirect, or design or device that may tend to convey a misleading impression should be avoided."

"Representations that are unwarranted on account of indefiniteness of a general sweeping character should be avoided."

"Testimonials, aside from the personal aspect given them by their letter form, hold out a general representation to the public for which the party doing the labelling is held to be responsible. The fact that a testimonial is genuine and honestly represents the opinion of the person writing it does not justify its use if it creates a misleading impression with regard to the results which the medicine will produce. No statement relative to the therapeutic effects of medicinal products should be made in the form of a 'testimonial' which should be regarded as unwarranted if made as a direct statement of the manufacturer."

"Statements on the labels of drugs guaranteeing them to cure certain diseases or money refunded may be so worded as to be false or fraudulent and to constitute misbranding. Misrepresentations of this kind are not justified by the fact that the purchase price of the article is actually refunded as promised."—*November, 1914, p. 283.*

JOURNAL OF AMERICAN MEDICAL ASSOCIATION.

Ventilation Theories Exploded:—The November 7th number of the above-named journal contains a symposium of papers on the subject of ventilation of hospitals, public halls and other places where numbers of people are brought together that proves about as surprising to many individuals as did Dr. Hatcher's paper on digitalis, reported for this meeting in October by Prof. LaWall, and for much the same reasons, namely, that they show the incorrectness of many of the ideas long held with reference to the subject. Very careful investigation has demonstrated that:—

1. The amount of oxygen, which in pure air amounts to 21%, may be reduced to 17% before the air becomes really harmful to breathe, yet rarely does it get lower than 20% in so-called poorly ventilated rooms.

2. Carbon dioxide in amount exceeding .04% has often been stated as being dangerous, but exhaustive experiments have shown that the amount may run over 1% without proving harmful, yet rarely does it exceed 0.4%, even in crowded rooms.

3. Odors do not necessarily indicate a poisonous condition of the air, and it is becoming generally well recognized that bacteria floating in the air are relatively unimportant as a source of disease, or at least of danger.

4. The depressing effects produced on individuals by the air of crowded or poorly ventilated rooms is due primarily to too high a temperature, to excessive humidity and to a lack of air circulation. Air low in oxygen content and high in carbon dioxide content, but kept in motion, is far less depressing than pure air not in motion.

Frederic Bass says that ventilation systems should aim to secure proper temperature, humidity regulation, keep air in motion and properly distributed, and prevent offensive odors from circulating.

The original articles and an editorial on the subject are well worth reading.

AMERICAN JOURNAL OF PHARMACY.

Germination of Belladonna Seed:—A. F. Sievers of the Bureau of Plant Industry, U. S. Department of Agriculture, reports the results of a series of experiments.

"The subjection of belladonna seed to freezing temperature accelerates their germination. Hence it is of benefit to sow the seeds in the fall."

"There seems to be no relationship between the size of the seed and its germinating power."
"The heavy seeds are by far the best."
"Color seems to be no criterion of the value of the seed as regards germinating power."
"Treatment of the seed with various strengths of sulphuric acid from one to sixty minutes did not appear to be of any great value."
"Treating the seeds with hydrogen peroxide was found to be of very material benefit."
"Scratching the seed coats, while of some benefit, was not nearly as beneficial as the peroxide treatment."—*November, 1914, p. 483.*

JOURNAL OF INDUSTRIAL AND ENGINEERING CHEMISTRY.

Determination of Camphor and Certain Essential Oils when in Solution in Alcohol:—W. B. D. Penniman and W. W. Randal describe a rapid method. A definite volume of the solution is put into a Babcock bottle with a solution of calcium chloride and the mixture whirled; a definite volume of gasoline is added and the contents of the bottle again whirled; calcium chloride solution as added to bring dividing line to zero mark on neck of bottle, and a calculation is made from the volume of gasoline solution. Gasoline boiling between 40° and 60° C. is used. Good results were obtained from alcoholic solutions of camphor, oils of peppermint, lemon, orange, anise, nutmeg, cloves and wintergreen.—*November, 1914, p. 926.*

NORTH DAKOTA AGRICULTURAL EXPERIMENT STATION BULLETIN.

Examinations of a Number of Samples of Spirit of Camphor:—About 125 samples were obtained from various sources, examined and the results tabulated for easy reference.

When the spirit is made by the U. S. P. process it contains 86% alcohol and 10% camphor. Of the lot examined one had only 53% alcohol, the others ranged between 71% and 93%, most of them running about 90%. One ran as high as 18.6% camphor, the others ranged between 6.8% and 12.7%, most of them ranging between 8.7% and 10.3%.—*November Special Bulletin, No. 12.*

THE DRUGGIST'S CIRCULAR.

The War Stamp Tax is thus commented upon:—"It is plain if the manufacturer does not pay the tax it will fall upon the retailer and it therefore behooves the latter to act accordingly."

Another editorial makes plea for support of the Stevens bill.

"An Improved Method of Testing Urine for Acetone," by F. E. Niece, a valuable paper, and *"Big Things in Pharmacy,"* a paper of much interest treating of the scientific progress of our calling, are two good articles in this issue.

AMERICAN JOURNAL OF PHARMACY.

"Belladonna and Hyoscyamus" is the title of a paper by E. L. Newcomb, which is begun in this issue.

"Commercial Papain" is the subject of an interesting paper by F. N. Heyl, C. R. Caryl and J. F. Staley.

"Pure Drugs and the Public Health," by M. I. Wilbert, Ph. D., is the title of an interesting paper.

CHEMIST AND DRUGGIST.

"A New Beta-naphthol Reaction" is described as follows:—A few drops of concentrated sulphuric acid are added to 1 cc. of diluted beta-naphthol solution, and to this is added 0.05 cc. of a 0.01 *per cent.* solution of sodium nitrite, when the above coloration is obtained. The reaction is sensitive in a solution containing 0.0002 *per cent.* of beta-naphthol. The coloration is supposedly due to a quinonoid derivative of beta-naphthol.

JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.

An editorial comments on a recent bulletin of the Bureau of Chemistry which speaks of the importance of determining exactly the activity of digestive enzymes and ferments.

THE BULLETIN OF PHARMACY.

"Should the Salesman in Front or the Prescription Clerk in the Rear Receive the Higher Salary?" is an interesting symposium upon this question.

THE AMBULANCE CONSTRUCTION COMMISSION.

This is the first great war in which field motor-ambulances have been extensively used. It was inevitable that many defects should be found in existing types, and in various quarters experts began to ask whether something could not be done to standardize the patterns and to improve the type. At the instance of Mr. Henry S. Wellcome the founder of the Wellcome Bureau of Scientific Research, a Commission has been formed, and the names of members show at once that the matter is regarded as of first importance by those most intimately connected with the welfare of the wounded soldier.

Sir Frederick Treves, whose long experience and distinguished service specially fit him for the task, has consented to be the Chairman. The Admiralty is represented by the Director-General of the Medical Department, R. N., while the Quarter-Master-General to the Forces and the Acting Director-General, Army Medical Service, represent the War Office. The British Red Cross Society is, of course, represented by Sir Frederick Treves, and the St. John Ambulance Association by Sir Claude Macdonald and Sir John Furley. The remaining members are all experts. This Commission will first and foremost act as a judging committee for the award of prizes of the value of £2000 provided by the Wellcome Bureau of Scientific Research. These prizes are offered for the best designs of an ambulance-body which shall fit a standard pattern motor-chassis for field motor-ambulances. The last day for the receipt of competing designs is June 30, 1915. It is hoped that the competition will bring in a number of ingenious designs, from which the ideal field ambulance-body will be evolved.

It may be asked why the competition is restricted to designs for a body and not for the complete ambulance, including a chassis. The reason is that a chassis takes much longer to build than a body, and that, when war breaks out, it is impossible to get at short notice anything like a sufficient number of any one type of chassis. On the other hand, a standardized body to fit any chassis of approved dimensions can be constructed in numbers at comparatively short notice. And a perfected body is badly wanted to ensure complete comfort for the wounded.

It is hoped that the information obtained by the competition, and in other ways, will be published in some permanent form, available for future reference. Probably in addition to one design of special excellence, there will be submitted various ingenious suggestions which may be incorporated in the pattern design approved by the Commission. For these, a portion of the prize-money has been set apart. The first prize is of one thousand pounds, the second of five hundred, and the third of three hundred pounds. All details of conditions may be obtained from the Secretary, the Ambulance Construction Commission, 10 Henrietta Street, Cavendish Square, London, W. The competition is open to citizens of all nations.

SOME FACTS CONCERNING DRUG IMPORTATIONS.

H. H. RUSBY, M. D.

In the January number of the JOURNAL, Mr. J. W. England contributes a noteworthy article on "Drug Importations." With Mr. England's general conclusions and claims, as there outlined, I am in full accord. Too much care cannot be taken, either to insure uniform findings at different ports and at the same port on different occasions, or to give the importer the fullest opportunity of having the merits of his case sifted until the truth is established. On the other hand, there are statements in Mr. England's article that have no basis whatever in fact, and there are others which can be justly weighed only in the light of existing conditions to which he makes no reference. On page 57 he says:—"It is manifest that such a system gives a large scope for the use of personal influence and offers the possibility of gratifying private grudges. It is not asserted or intimated that any of the officials of the ports of this country are guilty of such nefarious practice, but it is certain that the system encourages such practice." It is a fact that the system in operation at the ports of entry of this country is devised to prevent the analyst from knowing anything about the personal or firm relations of the articles examined. It is very likely that at small ports, where little business is done and where very few persons are employed, such knowledge incidentally reaches the analyst, but this is not a design in the establishment of the methods. I presume that my own case does not differ materially from that of others at the larger ports. I have probably examined more than half of the crude drugs that have entered the United States during the last few years, and I have probably not known anything of the shipper, consignee or owner of a dozen shipments that I have thus examined. In case of the few exceptions, the knowledge has come to me purely by accident. If, after the signing and filing of my certificate a protest is made, such knowledge necessarily reaches me, but up to that time, all that I know of the article is its serial number, its professed character and the date on which I receive it. It is manifest that Mr. England's statements about the tendency of the system are wholly erroneous. While it may be believed by some persons that an analyst would, if he could, gratify a malignant spirit, it can hardly be believed, under the circumstances, that he could do so if he would.

As a matter of fact, the danger, if Mr. England's assumption were correct, would be rather in the direction of trying to save some one from a loss than of trying to cause one to occur. On the day of this writing, an intimate personal friend is condemned to a four hundred dollar loss, upon my certificate, because his importation contains 57% of adulterant, and it is a blessed relief that I am able to tell him that I knew nothing more of his sample than its date and number, until he himself informed me that it belonged to him.

Farther on, Mr. England asks, "Whoever heard of a Government official in any department, failing to sustain the scientific or technical report of a fellow official?" I think he will adopt a somewhat less cynical view upon my assurance that this is a common occurrence in the Bureau whose workings he is criticising. During

the month of January, I prevented two prosecutions by submitting a judgment that a fellow member was in error in his findings. I have in many cases rendered a favorable opinion of shipments that others had condemned, and vice versa. I have never known the slightest resentment or criticism to result from such action. My own judgments have been similarly disputed by others. Although in some such cases I have continued to believe my opinion to be the correct one, no thought of resentment has ever been excited. It is very likely that Mr. England's impressions on this subject have resulted from cases of the following kind. An importer who has always insisted upon his approval of the objects and purposes of the drug law, and who has given it his continued support, suddenly finds himself saddled with a shipment of the unfitness of which neither he nor any one else has any doubt. He may previously have condemned the importation of a shipment of far better quality, yet he now insists upon having his own importation released, and he resorts to every sort of misrepresentation of the case and to unjust criticism of the officer who condemned the goods, in his endeavor to escape the consequences of a mistake that he would have loudly condemned in any other. The rarest thing in all my experience, although I have known it to occur, is for an importer to exhibit a willingness to have the law justly enforced when this would result in a loss to him.

A far more serious question than any of the above is that of providing for judicial review of the findings of experts, which Mr. England strongly approves, and in which approval he is supported by many of the ablest lawyers, judges and legislators in the country. On general principles, it would seem clear that the importer should have this right and it is only the result of experience which can lead one to take the opposite view. Fortunately, we have an abundance of experience upon which to base our conclusions. All seizures of interstate shipments are subject to court review and many hundreds of such cases have been brought since the Federal Food and Drugs Act went into operation. At many of these trials, I have been a listener and I can recall scarcely any into which gross perjury did not enter. Were one to judge only by his observations of such cases, he would be likely to conclude that there is no other class of persons so dishonest as these expert witnesses. Leaving out of consideration all cases in which there is a fair ground of error and all differences of opinion, I do not hesitate to assert that in nearly all important cases one or more witnesses testify to what they know or fully believe at the time to be untrue. Our unfavorable opinion of these results must be qualified by the reflection that in most such cases, some experts have been asked to testify who have refused to do so, on conscientious grounds. Nevertheless, it is never difficult for an attorney to find one or more who are willing to thus degrade the profession. I have seen a chemist deny the pinkish-color which promptly appeared in the test performed in the court-room while he was looking on. I have known a witness, after having sworn to an entirely different result from that which he had previously obtained, to retire under instructions of his attorney, so that he would not see the result of the same test applied in the presence of a jury and in this way would escape being compelled to state the truth concerning it. I have heard a witness testify that all volatile oils contain alcohol in varying amounts, oil of peppermint about 90%!

In this case, because that witness occupied the chair of Materia Medica in a medical college, while the one opposed to him was in a college of pharmacy, it was only with great difficulty that the jury could be convinced that his testimony was incorrect. It is this ignorance of the jurors, their complete dependence upon the statements submitted, and their unfitness for grasping and interpreting technical facts, in which the danger of this method of deciding such questions principally resides. As to the tendency of the witnesses to speak correctly, we must consider whether government witnesses, with no other influencing motive than that of justly and impartially upholding the law, are more or less likely to testify truthfully than are men who have been offered a rich fee, often a temptingly large one, to say that for the saying of which they are to be paid.

After all, could there be a more satisfactory method of deciding contested cases than by a central reviewing board at Washington, properly constituted and manned? Such a board should of course be sufficiently large to contain experts in every subject coming before it, so that it would collectively represent a greater and more accurate knowledge and better judgment than that of any of those whose opinions are to be reviewed. I am not discussing whether this is or is not true at present, but merely submitting the opinion that this method, properly carried out, is the ideal one and that it is free from those objectionable features which are collectively represented by the term "bureaucratic."

HYPODERMIC INJECTION OF PHENOL FOR TETANUS.

In spite of treatment by antitetanic serum, cases occur in which the course of the disease does not appear to be checked. In one such case of traumatic tetanus recorded, in which the gravest symptoms developed even after the administration of two successive injections of serum, rapid amelioration and ultimate cure were obtained by the use of hypodermic injections of phenol. The dose given was 2 mils of a 5 per cent. solution, every two hours for six days, then every four hours for another five days, after which they were no longer needed. No urinary pigmentation and no albuminuria were observed, but a carbolic rash appeared about the seventh day of treatment. It is stated that the gross mortality in cases treated with antitetanic serum is from 61.8 to 78.9 per cent. Bacelli, the originator of the phenol treatment, gives the mortality by that method as only 17.4 per cent. Since the hypodermic injection of phenol in no way interferes with the action of serum previously administered as a preventive, it is worthy of extended use where the former appears to have failed and the disease shows signs of developing.—Drs. Purves Stewart and J. T. C. Laing (*B. M. J.*, 1914, 2, 1098).

Of General Interest

IMPORTANT ANNOUNCEMENT.

At a joint meeting held on January 27, of the California Pharmaceutical Association, the Retail Druggists' Association of San Francisco, and the local branch of the American Pharmaceutical Association, a large attendance gathered at the Hofbrau Cafe for luncheon. The object of the meeting, as explained by President Green of the C. Ph. A., was to get the different associations and committees working harmoniously for the entertainment of druggists as guests during 1915.

On account of the A. Ph. A. making its time of meeting August 9 to 14, inclusive, it was decided, after considerable discussion, to have the state meeting the preceding Friday and Saturday, August 6 and 7.

The Chair appointed the following committees:—

Committee on Entertainment. All the C. Ph. A. Committee, and four additional names from the Retail Druggists' Association of San Francisco, to be appointed by its President, and two from the local branch of the A. Ph. A. to be appointed by Dr. Schneider.

Committee on Permanent Headquarters. I. Beck, L. A. Farran and E. R. McDonald.

Committee on Finances. E. A. Baer, W. Guerich and J. M. Casselman.

President Gerdes of the Retail Druggists' Association spoke of the desire and willingness of the San Francisco druggists to work with the State Association, and make this meeting a memorable one. Mr. Guerich followed with an outline of the progress made by them, and suggested that the committee on permanent headquarters look into the matter of securing exhibits from manufacturers. Secretary Bowerman of the C. Ph. A. was instructed to confer with the Secretary of the Retail Druggists' Association and the Secretary of the local branch of the A. Ph. A. and arrange for a large get-together meeting in the early part of March—preferably at the Palace Hotel. Secretary Bowerman was also instructed to have the American Druggists' Syndicate and the Rexall Company arrange the time for their annual conventions to coincide with the aforesaid August datings if possible. Also to arrange with Mr. Barr, Director of Congresses for the Panama-Pacific International Exposition for a suitable hall and to give an invitation to the druggists of Alameda county to meet with us and give us the benefit of their counsel and support.

K. B. BOWERMAN.

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NECROLOGY.

The members of the Association will learn with deep regret and sympathy of the demise of Mrs. Henry P. Hynson which occurred at Roland Park, a suburb of Baltimore on December 14, last. Mrs. Hynson was an invalid for several years, but through her long illness she maintained a cheerful disposition and her passing-away leaves a void not easily filled. The Journal extends to our esteemed fellow-member and the family its most sincere sympathy in the deep loss they have sustained.

Proceedings of the Local Branches

BALTIMORE.

The annual meeting of the Branch was held Wednesday evening, January 20, in the Hynson and Westcott assembly room at Charles and Franklin streets with President E. F. Kelly in the chair.

In the absence of the Secretary, E. W. Hodson, Wm. J. Lowry, Jr., Acting Secretary, served in his stead.

Mr. Louis J. Burger, a Ph. G., but now a member of the Baltimore bar and a United States Commissioner as well as Professor of Pharmaceutical Jurisprudence in the Department of Pharmacy of the University of Maryland, delivered an address on the Harrison bill, prefacing his remarks by suggesting to Mr. Hynson that he give a brief historical sketch of the bill.

This brought out that the bill had its beginning as the result of the work of Hamilton Wright of Vermont, which culminated in the pigeon-holed Foster bill. This bill had some excellent features but it required so many onerous entries, records, reports.

etc. that it would have necessitated an endless amount of acumen and accuracy to obey its mandates and avoid its penalties.

This bill was not reported out of committee, but the desire for national legislation to prevent the increasing spread of the narcotic habit evil was so great, that the different interests involved finally got together, through the Drug Trade Conference, and the Harrison bill was the outcome.

Mr. Burger went through the law thoroughly and took up a section at a time, stopping to answer questions as he went along and when he had finished, led the discussion which followed.

Mr. S. L. Hilton, a member of the Washington Branch, who took quite an interest in the bill while on its way through Congress, reviewed it and laid particular stress on the necessity of every pharmacist registering promptly, following its requirements thoroughly, and keeping records accurately.

He brought with him a copy of the proposed regulations and although they have not been adopted officially, yet they are practically completed and tell what to do and how to do it, in order to comply with the law.

The bill was discussed from every angle and view-point and a rising vote of thanks was extended to Messrs. Burger and Hilton for their painstaking and thorough exposition.

The incoming president was authorized to appoint a committee of five on publicity with the idea in view of acquainting the public through the press as to the workings of the law and also to prepare them for some of the shocks which they might otherwise receive when some of their old favorites are refused them.

The following officers were elected for the 1915 term: President, E. W. Hodson; Vice President and Chairman of the Executive Committee, Chas. C. Neal; Secretary and Treasurer, Wm. J. Lowry, Jr.; Assistant Secretary, Olive B. Cole; Chairman Committee of Practical Pharmacy and Dispensing, Chas. L. Meyer; Representative in the Council, Henry P. Hynson. The rest of the committees to be appointed by the president.

At the request of Dr. Chas. Caspari, Jr., the sense of the Branch was taken on the proposed change from Cubic centimeters to Milliliters in the coming Pharmacopœia and it was suggested, though by no means unanimously, that Milliliters should be used.

It was decided to change the meeting night to the third Wednesday of each month instead of Thursdays as heretofore.

WM. J. LOWRY, JR., Secretary.

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CINCINNATI.

The regular monthly meeting of the Cincinnati Branch, A. Ph. A., was held at Lloyd Library, December 12, 1914.

President E. H. Thiesing presided.

The minutes of the previous meeting were approved.

The President announced the death of Mr. Matthew M. Yorston, a life member of the A. Ph. A., which occurred December 18. Prof. J. U. Lloyd spoke very feelingly of the early struggles of Mr. Yorston in the field of Pharmacy.

M. M. Yorston conducted a drug store in this city for years and was popularly known, as the man who introduced base ball into Cincinnati, he being the founder of the first Red Stocking Club in this city.

He came to this country from Glasgow, Scotland in 1851. From New Orleans he went to Louisville and entered the drug business. In 1859 he came to Cincinnati and opened a store. Mr. Yorston ranked high in the profession and on numerous occasions was a contributor to journals devoted to pharmacy.

The President appointed Messrs. Jones, Heineman and Apmeyer to act as a committee to frame a suitable resolution of condolence on the death of Mr. M. M. Yorston.

The report of the Committee on Memorial of Mr. Geo. Merrell was presented by Prof. J. U. Lloyd and a copy was ordered sent to the family and spread upon the minutes of the Association—Mr. Chas. G. Merrell, who was present, responded feelingly.

Mr. C. G. Merrell, as Chairman of the Committee on Program, announced several interesting features for the coming meetings.

Mr. H. W. Jones, Chairman on Progress of Pharmacy, made a very exhaustive and interesting report treating of the effects of the European war upon the drug business of America; the cultivation of Golden Seal; the efforts to restrict the sale of Bi-chloride tablets; the new British Pharmacopœia; Insecticides and Fungicides, and many other

matters of vital importance. At the conclusion of his address he received a vote of thanks.

Prof. Julius Greyer read a paper on "Mineral Waters," which was full of interesting and instructive information to all the members. The paper evoked an interesting discussion which was participated in by Messrs. Lloyd, Fennel, Merrell, Freericks and the author of the paper.

The Branch recommended this paper for publication in this Journal.

CHAS. A. APMEYER, Secretary.

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CHICAGO.

The January meeting was held at the University of Illinois, School of Pharmacy Building, Friday evening, January 22.

In the absence of President Wells, Vice-President Day presided.

Secretary Gathercoal read a short report covering the year 1914 and stated that the Branch had held nine meetings during the year at each of which a profitable and interesting discussion of some subject pertaining to pharmacy had been held. He spoke of the wide publicity given the reports of the Branch meetings in the pharmaceutical press and expressed to its members the appreciation of the Branch. The financial report showed expenditures during the year of about $70.00 and a balance on hand of $28.90.

The following were elected to serve the Branch for the ensuing year:

President, Hugh Craig; First Vice-President, W. B. Day; Second Vice-President, C. A. Storer; Third Vice-President, Miss Jean Gordon; Secretary-Treasurer, E. N. Gathercoal; Chairman, Membership, L. L. Mrazek; Committee on Legislation, Jas. H. Wells; Committee on Practice, Wm. Gray; Committee on Medical Relations, Dr. Bernard Fantus; Committee on Publicity, Thos. Potts.

President Craig, introduced by Chairman Day, addressed the meeting on the very important subject: "The Administration of the Stamp Tax." Mr. Craig as editor of the Journal of the National Association of Retail Druggists, has personally requested of the Commissioner of Internal Revenue, rulings as to the stamp requirements on a number of articles commonly sold by druggists. The presentation and discussion of these rulings resulted in much practical information to the retail druggists present. In Mr. Craig's opinion the pharmaceutical organizations should unite in opposition to any further extension of this emergency law beyond its present limitation, i. e., the end of this year. He stated that the prospects for a continued improvement in business conditions were certainly good and that with such improvement any necessity for an extension of the stamp tax beyond the present year should disappear. However, pharmacists, through their organizations, should present a strong protest against any possible extension of the law.

Dr. James H. Beal followed Mr. Craig with an address on the Harrison Act. As a delegate to the Drug Trade Conference, Dr. Beal has acquired a very intimate knowledge of this law, in fact, framing some of the provisions himself.

In his introduction, Dr. Beal explained why, ostensibly, this act was a Revenue Measure, but that in real intent it aimed to exercise such a control over the handling of the narcotic drugs, opium and coca leaves, as to destroy the drug habit evil. He stated that the law as it now stands was a compromise not fully meeting the ideas of either the Government or the Drug Trade Conference.

The various phases of the law were presented as answers to a series of questions; the first question being: "Who shall or shall not be licensed under this law?" The answer brought out the fact that any person whether physician, pharmacist, dentist, veterinarian or not, upon the payment of the license fee of $1.00, might avail himself of the privileges of handling these narcotic drugs, while, of course, all who did deal in them must be so licensed. The real value of this portion of the law is in the publicity feature, for provision is made so that anyone may obtain a list of all such licensed persons and proper state and municipal officers may obtain copies of the quarterly reports that are required from all licensed persons, with such information, state and municipal anti-narcotic law violations may be rigidly prosecuted.

In his discussion of further questions, Dr. Beal made a number of prognostications as to the rulings of the Internal Revenue Department in reference to a number of interesting features. Thus he believes the Department will rule that licensed physicians may administer the prohibited drugs to the

patient at the bedside or in the home without keeping record of same but that when given to the patient in the office the proper records must be kept. Probably, as a protection to pharmacists, licensed physicians will be required to place on prescriptions calling for the prohibited drugs, the license number.

Dr. Beal was very sure that copies of such prescriptions could not be given and that such prescriptions could not be refilled and further that probably the refilling of prescriptions containing the prohibited drugs in excess of the excepted quantities and dispensed previously to March 1 next, would not be permitted.

One of the very onerous features of the original bill which required licensed persons to keep a balanced account of the sales of these prohibited drugs against their purchases was very fortunately replaced by the official order blank method. Now the pharmacist is required to keep on file for two years all orders for purchases, and all orders for sales and all prescriptions coming under this law and to report upon the same upon request of a revenue official.

Dr. Beal's address was most enthusiastically received and he was given a hearty vote of thanks.

About eighty pharmacists were in attendance.

E. N. GATHERCOAL, Secretary.

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NEW ENGLAND.

A meeting was held on January 13 in Boston in conjunction with another local pharmaceutical association.

Fifty-five men partook of the fine dinner provided after which several topics of more than usual interest to the drug world engaged their attention.

The new narcotic laws, state and national, were the advertised topics for discussion and because of the intimate knowledge of these measures on the part of two ex-presidents of the Branch, Charles F. Nixon and James F. Finneran, most of the members went home with a feeling of having learned a great deal.

Charles A. Stover explained the working of a druggists' wholesale company which was launched in Boston some time ago and which may become a considerable factor in the retail drug line as it has already proven profitable for those who are actively interested in it.

There were no formal papers presented at the meeting.

R. ALBRO NEWTON, Secretary.

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NEW YORK.

The regular meeting of the New York Branch was held at the New York College of Pharmacy, President Arny in chair, December 14, 1914. In the absence of Secretary McCartney, the chair appointed Jeannot Hostmann as secretary *pro tempore*.

The minutes of the previous meeting were approved.

The Chairman of the Committee on Legislation, Dr. Anderson, made a detailed and lengthy report on the status of anti-narcotic and stamp legislation and several rulings and decisions that had been given.

The report was discussed by Messrs. Bigelow, Diekmann and Diner.

Dr. Diekmann made a report on Pharmaceutical Progress which was discussed by Dr. Diner and Dr. Raubenheimer.

Chairman Bigelow, of the Mayo Dinner Committee, in reporting progress, announced that the dinner to President Mayo of the parent association would be held at the Chemist's Club on the evening of January 14, 1915 at 7:00 p. m.

Charles N. Lehman was elected a member.

Chairman Arny appointed Messrs. Bigelow, Rehfuss and Diner as a Committee on Nominations.

Dr. Wimmer then read his very interesting paper on "Emulsions as Colloidal Systems" which was copiously illustrated. The paper was discussed by Messrs. Diner, Niece, Raubenheimer, Mayer, Turner and Roemer.

After tendering a rising vote of thanks to Dr. Wimmer the meeting adjourned.

JEANNOT HOSTMANN, Secretary *pro tem.*

The following officers were elected at the regular meeting of the New York Branch held on January 11, 1915 at the New York College of Pharmacy Building:

President, John Roemer; Vice-President, J. Leon Lascoff; Treasurer, Joseph Weinstein; Secretary, Jeannot Hostmann; Member of the Council, Thos. DeA. McElhenie; Chairmen of Committees: Education and Legislation, Wm. C. Anderson; Progress on

Pharmacy, George C. Diekman; Membership, J. H. Rehfuss; Fraternal Relations, Louis Berger.

At this meeting papers were read by Dr. Wm. Jay Schieffelin and Dr. H. H. Rusby. Dr. Schieffelin's paper was on "Dosage of Radium Emanations." [Published in the "Journal" of December.]

JEANNOT HOSTMANN, Secretary.

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PHILADELPHIA.

The regular meeting of the Philadelphia Branch was held Tuesday evening, January 12 at the Medico-Chirurgical College.

President E. Fullerton Cook called the meeting to order at 8:15 p. m. The minutes of the last meeting were read and approved.

A communication from the chief of the Bureau of Chemistry of the Department of Agriculture, in answer to a resolution passed at the November meeting, concerning the definition of the word "dram" as expressed in General Information Opinion No. 66 issued July, 1914, was read. The full text of the letter is as follows:

December 16, 1914.

Mr. J. Ed. Brewer, Secretary, Philadelphia Branch, American Pharmaceutical Association, 1705 Cherry Street, Philadelphia, Pa.:

Dear Sir: Your letter of November 16, embodying a resolution adopted by your local branch relative to the use of the word "dram" has been received.

In construing the Net Weight Amendment upon which Opinion 66 was based, inasmuch as this has to do with articles of food, it was necessary to adopt the avoirdupois system. The dram is a unit of the avoirdupois system and also of the apothecary system, but its use under the apothecary system does not occur in the application of the Net Weight Amendment to foods. It is, of course, applicable in case of small quantities of drugs or other commodities sold in the pharmaceutical trade. In the apothecary system the word "dram" is used as a unit of weight and where used as a unit of measure, as it often is, it would appear that it should be designated as a fluid dram. A similar duplication appears in the use of the word "ounce" in liquid measure, and it has seemed desirable to this Bureau that where the term "ounce" occurred in liquid measure it should be designated as a fluid ounce reserving to the word "ounce" its designation as a term of the avoirdupois system.

So far as a practical application of the use of the word "dram," either under the avoirdupois system or apothecary system, or the term "fluid dram," is concerned, it would appear to be of minor importance as it denotes a unit which is below that which is expressed under paragraph (e) of Food Inspection Decision 154, copy of which is enclosed.

Trusting this will explain the position of this Bureau and that it will not be in conflict with the proper use of the term "dram" in the pharmaceutical trade,

Respectfully,

(Signed) C. L. ALSBERG,
Chief.

It was moved and passed that the letter be accepted and placed on file.

Under the heading of deferred business Prof. C. H. LaWall read the report of the committee appointed at the December meeting to draw up an answer to the letter from Pearson Publishing Co. concerning the article Pills and Piracy which appeared in the November issue of Pearson's Magazine.

Prof. F. E. Stewart moved that the report be submitted to the Council of the American Pharmaceutical Association with the request that they forward it to the Pearson Publishing Co. for publication. The motion carried.

The program of the evening was then taken up and Mr. Louis K. Liggett delivered an address on "Modern Drug Store Merchandising."

"The Current Review of Pharmaceutical Journals" was presented by Mr. John K. Thum.

As moved by Prof. F. E. Stewart a standing vote of thanks was given to Messrs. Liggett and Thum.

During the discussion of the papers Pharmacy from a professional aspect was interestingly presented by Mr. Franklin M. Apple, Prof. J. P. Remington and Prof. F. E. Stewart—after which the meeting adjourned.

J. ED. BREWER, Secretary.

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SAN FRANCISCO.

The San Francisco Branch met at 723 Pacific Building on the evening of January 12 to discuss "Qualifications to practice Pharmacy." The general opinion prevailed that any one intending to study pharmacy should have a definite and sufficient preliminary general education followed by systematic special instruction in a recognized pharmaceutical school. Further discussion

centered on the value of drug store experience and it was thought that only such experience should be valued as is obtained from actual practice in the performance of pharmaceutical work under the direction of experienced pharmacists. The mention of recognized pharmaceutical school also called for opinions on what constitutes a recognized school. In the discussion that followed, entrance requirements, faculty, general administration received due consideration.

Mr. J. L. Lengfeld spoke of Potassium Tellurite as an indicator of microbial life. Samples and literature were shown—these having been sent by the Research Department of Parke, Davis & Co.

Mr. William Milton Cordivenus applied for membership in the American Pharmaceutical Association and in the local branch. The S. F. Branch is pleased to add Mr. Cordivenus to its roll as he has always taken an active interest in pharmaceutical affairs.

The Branch adjourned to meet again on February 9, (second Tuesday), 723 Pacific Building. "Standardization of Pharmaceuticals" will be the topic for the evening.

CLARISSA M. ROEHR, Secretary.

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SAINT LOUIS.

A regular meeting of the Saint Louis Branch was held in the St. Louis College of Pharmacy, January 15, 1915. The meeting was called to order by Dr. O. F. Claus. After the disposal of the routine business the chair called upon Mr. A. W. Pauley, who presented his paper "Commercial Pharmacy—A Timely Topic." The paper elicited much discussion.

The Secretary read the paper entitled "The Sale of Poisons," contributed by Mr. Mittelbach, Booneville, Mo.

Dr. H. M. Whelpley gave a brief summary of the Harrison law.

Mr. P. L. Gain of East St. Louis, Ill. spoke in behalf of the Illinois Pharmaceutical Association meeting to be held at Centralia, June 14-16.

JULIUS C. HOESTER, Secretary.

WASHINGTON, D. C.

The January meeting was held January 27, 1915, at the National College of Pharmacy. The subject presented for discussion was the new Imperial British Pharmacopœia, by M. I. Wilbert.

The subject was ably handled from the view-point of modern medicine and pharmacy as well as to its origin and history, most interesting data being given which clearly showed the chaotic condition of pharmacopœial standards in the British Empire previous to the issue of the British Pharmacopœia of 1914.

It was further pointed out that much dissatisfaction exists among the pharmacists owing to the fact that after the British Pharmaceutical Society had assisted and performed an enormous amount of work in connection with the revision, little if any credit has been given to the pharmacists.

The new British Pharmacopœia shows 43 additions and 160 deletions, it contains many of the newer remedies that will not be included in the coming revision of the U. S. Pharmacopœia, while such drugs as figs, prunes, sarsaparilla, sassafras, Co. Spirit of Ether and brandy have been deleted. It contains but 17 fluidextracts and 16 tinctures, plasters have almost lost their place among the official recognized medicaments, infusions and decoctions are however still popular.

The decided innovation in this revision of the British Pharmacopœia is the dropping of the Imperial system of weights and measurers and the adoption of the metric system. The sanctioning of the term *Mil* instead of Cubic Centimeter is in accord with modern scientific trend. Doses are given in both metric and Imperial systems. Here the same error has been made that was made in the U. S. P. VIII, accuracy being sacrificed as to the proper equivalents.

Official abbreviations are recognized in the appendix, which also contains many general processes for both chemical and other substances, including elaborate descriptions even histological characteristics, and most rigid requirements as to freedom from traces of arsenic and lead. Many assays for crude drugs and galenicals are given as well as for volatile oils.

It remains to be seen whether the publication will be a pharmacopœia for the entire

British Empire, as designed, as it has already been severely criticized and many of the provinces are very much dissatisfied with the revision.

Owing to the peculiar features of the copyright laws of Great Britain the British Pharmacopœia becomes official before publication, it is, however, placed on exhibition for a period previous to becoming official.

The paper brought out much discussion that was participated in by all present.

S. L. HILTON, Secretary.

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WEST VIRGINIA.

This, the youngest Branch of the A. Ph. A. organized at Morgantown, November 19, 1914. The following officers were elected:

President, W. A. Ream; Vice Presidents, G. O. Young, John Coleman, C. A. Neptune; Secretary, A. B. Berry; Treasurer, W. C. Price; Council Representative, Prof. Charles H. Rogers.

Prof. Rogers read an address from Secretary England entitled, "Dreaming and Doing." [Published in December issue.]

A vote of thanks was tendered Mr. England for his delightful address.

A resolution was adopted favoring the passage of a bill by the W. Va. Legislature creating the offices of state food and drug inspectors and the secretary was instructed to communicate with Governor Hatfield concerning the matter.

There was a good attendance at this, our first meeting and the prospects are bright for a vigorous, active branch.

The results thus far obtained are largely due to the push and energy of Prof. Rogers of the Department of Pharmacy of the West Virginia University.

The January meeting occurred on Wednesday evening, January 20, at Woodburn Hall, of the University of West Virginia.

After the dispatch of the regular business the members had the pleasure of listening to two very interesting and instructive addresses—one by Dr. A. Arken of the College of Medicine, W. Va. University, and the other by Prof. Chas. H. Rogers of the College of Pharmacy, W. Va.

Dr. Arken's subject was "Serums and Vaccines" and he told of their origin and modes of preparation and the successes attained by their use in the treatment of disease.

Dr. Arken is thoroughly acquainted with this subject and is a logical and forceful speaker.

Prof. Rogers spoke entertainingly on "Organic Chemistry."

Our membership embraces members from all parts of the state and there is no question of the success of the Branch and that it will have considerable influence in aid of the advance of Pharmacy in the state.

A. B. BERRY, Secretary.

Council Business

COUNCIL LETTER No. 14.

Philadelphia, Pa., January 15, 1915.

To the Members of the Council:

The following tentative program for the sixty-third annual meeting of the Association, to be held at San Francisco during the week of August 9 to 14, 1915, is submitted by the Committee on Program, the General Secretary, Secretary of the Council and Local Secretary:—

Monday:

9.00 A. M.	Meeting of the Council.
3.00 P. M.	First General Session.
	Meeting of Committee on Nominations.
	Meeting of Committee on Resolutions.
7.30 P. M.	House of Delegates.
9.30 P. M.	President's Reception.

Tuesday:

9.30 A. M.	Second General Session.
10.00 A. M.	National Association of Boards of Pharmacy.
2.00 P. M.	Scientific Section.
	Women's Section.
	Commercial Section.
	National Association of Boards of Pharmacy.
7.30 P. M.	Meeting of the Council.
	House of Delegates.
	Ladies' Theatre Party.

Wednesday:

9.30 A. M.	Section on Education and Legislation.
	Commercial Section.
12.30 P. M.	Luncheon of College Alumni.
	Luncheon to A. C. P. F. by California College of Pharmacy.
2.00 P. M.	Scientific Section.
	Section on Practical Pharmacy and Dispensing (and Pharmacopœias, Formularies, and Standards.)
	National Association of Boards of Pharmacy.
	American Conference of Pharmaceutical Faculties.

7.30 P. M.	Meeting of Council. National Association of Boards of Pharmacy. American Conference of Pharmaceutical Faculties. Ladies' Reception.

Thursday:

9.30 A. M.	Section on Education and Legislation. Scientific Section. Practical Pharmacy and Dispensing (and Pharmacopœias, Formularies and Standards.)
2.00 P. M.	Joint Session of Section on Education and Legislation, the A. C. P. F. and N. A. B. P. Historical Pharmacy. Women's Section.
7.30 P. M.	Meeting of the Council (Reorganization.)
8.00 P. M.	House of Delegates. Ladies' Reception. Visit to Chinatown.

Friday:

9.00 A. M.	Meeting of the Council.
10.30 A. M.	Final General Session.
1.30 P. M.	Luncheon and Adjourned Final General Session at the Inside Inn, Exposition Grounds.
3.00 P. M.	Go-as-you-please Exposition Visit.
6.00 P. M.	Luncheon at the Inside Inn, Exposition Grounds.
7.30 P. M.	Exposition Visit Continued—The Concessions and Illuminations.

Saturday:

The Local Committee suggests that Saturday be given up to local visits and excursions, arranging the parties to suit. Some may desire to visit Mt. Tamalpais, others the Exposition and still others may desire to go to the Muir Woods, the University in Berkeley, Golden Gate Park.

Comments and suggestions are invited by the Committee on Program.

The Philadelphia Branch, through a special committee, has drafted a reply to an article that recently appeared in Pearson's Magazine, claiming that pharmacists charged the public a higher price for drugs bought on prescription than for the same drugs bought in bulk. It is the wish of the local branch that the reply be passed upon by the Council before it is sent to Pearson's Magazine for publication, in response to their offer of space for the presentation of the pharmacists' side of the question.

The statement is as follows:—

The undersigned members of a committee appointed by the Philadelphia Branch, A. Ph. A., to draft a reply to the article entitled, "Pills and Piracy" published in Pearson's Magazine for November, 1914, hereby present a report in the shape of a dignified impartial statement of the facts justifying the fees charged by Pharmacists for professional services in the compounding of prescriptions.

Respectfully submitted

CHARLES H. LAWALL, Chairman,
FRANKLIN M. APPLE,
CHAS. LEEDOM.

Are Pharmacists' Fees Fair?

"Each in his place, by right, not grace,
Shall rule his heritage—
The men who simply do the work
For which they draw the wage."

The profession of pharmacy is one of antiquity and honor. In its beginning it was intimately associated with the practice of medicine. Later on it was closely connected with alchemy, out of which grew our wonderful modern science of chemistry. Pharmacy was evolved as a separate profession through necessities which are clearly apparent to a student of the subject. The physicians of early times soon found that the practice of their own profession was a difficult enough undertaking alone. They, therefore, assigned to the pharmacist, then usually called the apothecary, the necessity and duty of posting himself upon the knowledge connected with the preparation of medicines for administration, the physician reserving for himself the right to diagnose the disease and prescribe the remedy.

The pharmacist-alchemist soon found that the increased responsibilities placed upon him by the physician prevented him from devoting much time to researches in chemistry. In this way has come about the evolution of professional pharmacy of to-day. There are different kinds of pharmacists to-day, just as there are different kinds of physicians, magazine writers and legislators. The pharmacist of to-day stands between the physician and the public for the purpose of serving both; both need this service, and to serve both properly means to be specially educated for the purpose.

A pharmaceutical education of to-day takes little less time and money than a medical education and compares closely in these respects with the professional education of doctors of dental surgery and of doctors of veterinary medicine. The time required and the money expended for this education makes it necessary for the pharmacist to

charge a fee for his professional services in filling prescriptions.

Nobody who appreciates the responsible character of the service thus rendered by the conscientious pharmacist ever criticises him for this. Every day he has the dispensing of life or death in the hollow of his hand; every day he takes upon himself the responsibility for the success or failure of the treatment of the case by the physician, assuming, of course, that the treatment is correct in principle. For this conscientious service he has the satisfaction of knowing that he has done his duty, for the profits of the prescription department in the majority of drug stores are a minus quantity. The pharmacist, besides being a professional man, must needs also be a business man or he could not make a living. If the sale of medicines and the compounding of prescriptions only were permitted by pharmacists, many communities would be without a pharmacy, for our progress along lines of preventive medicine has largely reduced the use of medicines by the educated physicians of to-day.

It is not denied nor is it necessary to apologize for the fact that a higher charge is often made for substances dispensed upon prescriptions than when these substances are sold over the counter in the uncompounded condition. Take as a concrete example the hypothetical case of a prescription for sodium bicarbonate or baking soda, to be divided into ten or twelve equal doses, as contrasted with an order for ten cents' worth of baking soda. The order for ten cents' worth of baking soda can be filled by anybody who happens to be back of the counter; even the errand boy or the soda water clerk has sufficient intelligence to go to the compartment where ready prepared packages (previously put up and labeled) are kept, hand it over the counter and take the money, but when a prescription for the same substance is brought in it is a totally different matter. Under all existing pharmacy laws the filling of prescriptions can only be legally done by a registered pharmacist, who is the highest salaried clerk in the store; the entire transaction is handled by him, including the filling of the prescription, the labeling and wrapping of the package. This, with the accurate subdivision into a number of doses, takes the time of this educated, high salaried clerk. There is no more justification for censure of the pharmacist, who under these conditions makes a greater charge for the same substance than was made in the other transaction, than there is for the censure of the physician who writes such a prescription making necessary this expensive service, instead of simply telling the patient, as he might have done, to go to the drug store and get ten cents' worth of sodium bicarbonate and take a certain amount ever so often. The physician, on his part, has had to go through a long and expensive course of education to be able to tell that bicarbonate of sodium was the substance best suited to the patient's needs, and is therefore entitled to a fee for this knowledge.

This larger charge upon articles supplied upon prescriptions is not an invariable rule or practice. The public has come to expect and the practice of pharmacists for several generations has been to price prescriptions upon a flat rate according to the size of the container or the dosage represented. With the advent of many expensive remedies has come many instances where no profit is made or even a slight loss sustained in order to maintain this uniformity of procedure. Also, if existing conditions showed that pharmacists were amassing large fortunes or that they were even better off, upon the average, than members of other professional callings requiring equal educational attainments, there would be grounds for criticism, but when it is realized that all the laws upon the statute books affecting pharmacy, requiring, as they do, preliminary education, and in several states graduation from a pharmacy college of approved standing before examination for registration, it seems like carping criticism to find fault with the pharmacist on account of prescription prices, and to allege dishonorable motives is to do a grave injustice to a profession which has as honorable record as any and in whose history can be found many names of those who have been the world's pioneer discoverers of valuable products and of those who have benefited the human race without hope of fee or reward.

"They that have wrought the end unthought
Be neither saint nor sage,
But men who merely did the work
For which they drew the wage."

Motion No. 26 (Reply to Article in Pearson's Magazine). Do you approve of the above reply of the Philadelphia Branch and the sending of the same to Pearson's Magazine?

Motion No. 27 (Application for Membership). You are requested to vote on the following applications for membership:—

No. 59. John Fadalius De Yonckheere, 455 Van Dyke Ave., Detroit, Mich., rec. by Ernest R. Jones and J. H. Webster.

No. 60. James Clyde McGee. Jackson, Miss., rec. by H. M. Faser and W. B. Day.

No. 61. Frank J. McNiff, Anthon, Iowa, rec. by R. A. Kuever and Wilber J. Teeters.

No. 62. Louis Dreibelbis, 37 W. Park St., Butte, Montana, rec. by W. B. Day and J. W. England.

No. 63. James Clarence Palmer, 4760 21st Ave., North East, Seattle, Wash., rec. by C. W. Johnson and Forest J. Goodrich.

No. 64. Thomas Call Armstrong, 80 River St., Cambridge, Mass., rec. by Elie H. LaPierre and William C. Acheson.

No 65. Paul Marcus Pfeiffer Merner, 6809 York Road, Philadelphia, Pa., rec. by Charles H. LaWall and E. Fullerton Cook.

No. 66. Dr. Arno Viehoever, Bureau of Chemistry, Dept. of Agriculture, Washington, D. C., rec. by W. S. Hubbard and L. F. Kebler.

No. 67. Lydia Franke Batdorf, 4125 West Belle St., St. Louis, Mo., rec. by J. W. Mackelden and H. M. Whelpley.

No. 68. Walter M. Chase, National Apartments, 931 Jefferson St., East, Detroit, Mich., rec. by H. M. Whelpley and J. W. Mackelden.

No. 69. Lusius Lamar Wilson, Tucumcari, New Mexico, rec. by W. B. Day and J. W. England.

No. 70. Charles J. Chapple, 2815 3rd Ave., N., Billings, Montana, rec. by William L. Bromme and Charles E. Mollet.

No . 71. A. C. Caldwell, 112th and Stephenson Ave., Chicago, Ill., rec. by William B. Day and E. N. Gathercoal.

No. 72. Julius H. Riemenschneider, 2916 Broadway, Chicago, Ill., rec. by W. B. Day and E. N. Gathercoal.

No. 73. Earl Frederick Lamb, 1605 East 47th St., Seattle, Wash., rec. by C. W. Johnson and Frances Edith Hindman.

No. 74. DeMott Clark Beach, 50 Ogden St., Hammond, Indiana, rec. by Albert H. Dewey and W. F. Gidley.

No. 75. Max Menzel, Pipestone, Minn., rec. by E. L. Newcomb and F. J. Wulling.

J. W. ENGLAND,
Secretary of the Council.

The Pharmacist and the Law

THE MULFORD PROTEST AGAINST INCREASE IN FREIGHT RATES.

The Western Traffic Association having withdrawn classification on drugs and chemicals in less than car-load shipments, the result of which action is an increase of 85% in freight-rates on such goods, the H. K. Mulford Company of Philadelphia has filed the following petition with the Interstate Commerce Commission:—

THE INTERSTATE COMMERCE COMMISSION.

H. K. Mulford Company against Pennsylvania Railroad Company, Pennsylvania Company, Chicago, Milwaukee & St. Paul Railway Company, Baltimore & Ohio Railroad Company, Chicago, Burlington & Quincy Railroad Company, and Northern Pacific Railway Company.

PETITION.

The petition of the above-named petitioner respectfully represents:

I.

That your petitioner is a corporation duly incorporated under the laws of the State of Pennsylvania, and its business is that of a manufacturing chemist, which it carries on in the city of Philadelphia, State of Pennsylvania.

II.

That the respondents are common carriers engaged in the transportation of passengers and property by continuous carriage or shipment, wholly by railroad, between points in different states of the United States, and particularly they are engaged in the carriage of drugs and chemicals from the city of Philadelphia, in the State of Pennsylvania, to points on the Pacific Coast, and are subject to the provisions of the Act to Regulate Commerce, approved February 4, 1887, and acts amendatory thereof or supplementary thereto.

III.

That under tariffs filed with your body on October 1, 1914, and which went into effect on November 15, 1914, the respondents, the Pennsylvania Railroad Company, the Pennsylvania Company and the Chicago, Milwaukee & St. Paul Railway Company, have

joined in a joint rate for the carriage of drugs and chemicals in less than carload lots over a through route from the city of Philadelphia, in the State of Pennsylvania, to points on the Pacific Coast, of $3.70 per hundred pounds, and the respondents, the Baltimore & Ohio Railroad Company, the Chicago, Burlington & Quincy Railroad Company and the Northern Pacific Railway Company, have joined in a similar joint rate.

IV.

That the said charge is an increase of 85% on the charge imposed prior to the effective date of the above-mentioned tariff and is unjust and unreasonable.

V.

That your petitioners, as shippers of drugs and chemicals from the city of Philadelphia to points on the Pacific Coast have, by reason of the facts stated in the foregoing paragraph, been subjected to the payment of rates of transportation which were, when enacted, and still are, unjust and unreasonable and are in violation of Section 1 of the Act to Regulate Commerce.

WHEREFORE your petitioner prays that the respondents may be severally required to answer the charges herein; that after due hearing and investigation an order be made commanding said respondents and each of them to cease and desist from the aforesaid violation of said Act to Regulate Commerce, and establish and put in force and apply as maximum rates in future to the transportation of drugs and chemicals in less than carload lots between the shipping and destination points named in Paragraph III hereof, in lieu of the rates named in said paragraph, such other rates as the Commission may deem reasonable and just, and also pay to your petitioner by way of reparation for the unlawful charges hereinbefore described such sums as, in view of the evidence to be adduced herein, the Commission may consider your petitioner entitled to, and that such other and further order or orders be made as the Commission may consider proper in the premises and petitioner's cause may appear to require.

Dated at Philadelphia, Pa., January 15, 1915.

H. K. MULFORD COMPANY.

Address: 412 to 432 South Thirteenth Street, Philadelphia, Pa.

HARRISON ANTI-NARCOTIC LAW.

The National Wholesale Druggists' Association has issued a circular letter to its members from which we excerpt the following information regarding the requirements of this law.

PRINCIPAL FEATURES OF THE HARRISON BILL.

The law covers opium, coca leaves, and any compound, manufacture, salt, derivative or preparation thereof.

Every person, firm or corporation, who produces, imports, manufactures, compounds, deals in, sells, distributes or gives away any of the articles covered by the law, must register with the collector of Internal Revenue in his District and pay a special tax of $1 per year. The special tax will be imposed for the period from March 1 to June 30, 1915 (which is the close of the special tax year), and the amount to be paid is 34 cents. After that date, tax will be imposed for the official year and payment will be $1.

Employees, while acting within the scope of employment by the taxpayers, will not be required to register or pay the special tax. Every person, partnership, association, company or corporation (other than a physician, dentist or veterinarian), who has more than one place of business where any of the drugs described are made, stored, or dispensed, must make a separate application for registry and pay special tax for each such place of business.

Sales of the drugs covered by the law may be made only to parties, whether manufacturer, wholesaler, retailer or doctor, on order-blanks provided by the collector of Internal Revenue. The buyer and the seller shall each preserve his copy of the order, and the law requires all such orders (both original and duplicate) to be retained on file for a period of two years, and they must be filed in their numerical order; that is, according to the registry numbers. Dealers are not compelled to fill orders for narcotic drugs, as the law provides what he shall do in case the order is accepted.

It is unlawful for any person to obtain by means of said order-blanks any of the aforesaid drugs for any purpose other than the use, sale or distribution thereof by him in the conduct of a lawful business in said drugs or in the practice of his profession. Orders by telegraph or telephone cannot be filled.

Order-blanks will be issued by collectors of Internal Revenue in tablets or books of ten or fifty blanks each. The charge for such blanks (including original and duplicate) will be at the rate of $1 per hundred. They will be issued only to persons who have registered and paid the tax, and any one other than the dealer to whom they are issued using them will violate the law.

Dealers may not sell to physicians on prescription when the drugs are intended for dispensing or prescribing, as all physicians, dentists and veterinarians, will be required to register under the law and order such drugs on the official order-blanks. Prescriptions written by physicians and filled either by the druggist or physician, must bear the name of the physician signing the same, and his registry number, and the name of the person for whom such prescription is filled. Such prescriptions must be preserved for a period of two years, and be readily accessible to the inspecting officers of the Government, State, District or City in which he is located.

Every person, firm or company *dispensing directly to consumers,* must on March 1, 1915, prepare and keep on file an inventory of all drugs covered by the law on hand at that date; no special form of inventory is required, and it must be verified by oath not later than March 5, 1915.

Every person registered under the act is required on demand of the collector of his district to render a sworn statement of the quantity of such drugs received by him during a period not exceeding three months preceding such demand. The said statement to show the names of the persons from whom the said drugs were received, the quantity received, and the date thereof. This record can be readily compiled from the duplicate orders on file.

It is a crime under the act for any person who is not registered and has not paid the tax to have in his possession or under his control any of the aforesaid drugs, and such possession will be construed as presumptive evidence of a violation of the act. This provision, however, does not apply to any employees of a registered person or to a nurse under the supervision of a physician, dentist or veterinary surgeon registered under the act, provided such possession is by virtue of his employment or occupation, and not on his own account.

United States, State, county, municipal, territorial and insular officers lawfully engaged in making purchases respectively for the army and navy, the Public Health Service, and Federal, State, county and municipal, territorial, and insular hospitals or prisons, are exempted from the provisions of the law; and sales, deliveries, etc., to these officers and institutions are not affected by the law; but private hospitals and institutions are not exempted.

Section 6 of the law exempts from its provisions all preparations and remedies containing stipulated quantities of the prohibited drugs, but it should be carefully noted that these exemptions do not apply to cocaine or any of its salts, whether alone or in combination with other drugs, and all sales of cocaine in any or every form whatever must be made in pursuance of a written order on the blanks supplied by the collector. It will also be noted that while the title of the law and the first section of it does not mention alpha or beta eucaine, Section 6 provides that the exemptions shall not apply to "liniments, ointments and *other preparations* which contain cocaine or any of its salts or alpha or beta eucaine or any of their salts or any synthetic substitute for them."

It should be remembered that the Harrison law is a taxation or revenue measure and applies to all transactions in every State, city or town, and is not confined to sales in interstate traffic. It should also be borne in mind that it is necessary for all dealers to continue to observe State and municipal laws regarding the sale of narcotic and poisonous drugs. Attention is also called to the fact that there is no advantage in retailers or dispensers purchasing large quantities of the prohibited drugs prior to March 1, as it will only add to the work of reporting stocks on hand in the inventory required by the regulations to be taken on that date.

The penalty for violating any of the provisions of the law is a fine of not more than $2,000 or imprisonment for not more than five years, or both, as well as the probable large expense incurred when suit is brought.

LISTS OF ARTICLES COMING UNDER THE PROVISIONS OF THE LAW.

Following find lists of drug products affected by the law. We have endeavored to secure as complete lists as possible of drugs, pharmaceutical preparations and proprietary medicines which must be sold only on presentation of the proper order-blanks. The lists are, of course, not complete or entirely accurate, but are sent out for the purpose of assisting persons registered under the act in segregating the articles coming under the operation of the law. In view of the fact that the Food and Drugs Act of June 30, 1906, requires that any of the drugs mentioned in this law shall be shown on the label, dealers should be able to determine without much difficulty whether a particular item comes within the provisions of the law or not.

PHARMACEUTICALS.

List furnished by Eli Lilly & Co. It is submitted subject to changes, omissions and corrections:

Fluid Extracts—Coca, U. S. P.; Coca, Soluble: Kola, Compound; Opium, Camphorated; Opium, Concentrated; Poppy Heads; Saw Palmetto, Compound; White Pine Compound, for making Syrup; White Pine Compound, Red, for making Syrup; Wild Cherry, Compound.

Pills—Alterative; Ammonium Muriate, Compound; Anodyne; Antispasmodic; Blue Mass, Compound; Calomel and Opium; Camphor, Compound; Camphor, Opium and Hyoscyamus; Camphor, Opium and Lead Acetate; Camphor, Opium and Tannin; Coca and Phosphorus, Compound; Coca, Phosphorus and Strychnine; Cocaine Hydrochloride (all sizes); Codeine (all sizes);

Codeine Sulphate (all sizes); Diaphoretic; Diarrhea Pellets; Heims; Heroin (all sizes); Ipecac and Opium (all sizes); Mercury Protiodide and Opium; Mercury and Chalk, No. 2; Morphatropia (all sizes); Morphine Sulphate (all sizes); Morphine Valerianate (all sizes); Neuralgic, Brown-Sequard; Neuralgic, Brown-Sequard, Half Strength; Neuralgic, Gross, N. F.; Neuralgic, Gross, Half Strength; Neuralgic, Gross, Pink Granules; Opium, Extract (all sizes); Opium, U. S. P.; Opium, Powdered (all sizes); Opium and Camphor, N. F.; Opium and Lead Acetate (all sizes); Opium and Silver Nitrate; Opium, Tannin and Lead; Phenacetine and Quinine, Compound; Quinine and Dover's Powder; Syphilitic, Ricord, Modified; Terpin Hydrate and Codeine.

Hypodermatic Tablets—Anti-asthmatic, Timmerman; Apomorphine Hydrochloride (all sizes); Apomorphine and Strychnine; Cocaine Hydrochloride (all sizes); Codeine Phosphate (all sizes); Codeine Phosphate without Sugar (all sizes); Codeine Sulphate (all sizes); Codeine Sulphate without Sugar (all sizes); Diacetylmorphine Hydrochloride, (all sizes); Eserine and Morphine; Eucaine Hydrochloride (all sizes); Eucaine Lactate; Heroin Hydrochloride (all sizes); Hyoscine, Compound, Lilly; Local Anesthetic, Dental (all sizes); Morphine Hydrochloride (all sizes); Morphine Meconate (all sizes); Morphine Nitrate (all sizes); Morphine Sulphate (all sizes); Morphine and Atropine (all sizes); Morphine, Atropine and Strychnine (all sizes); Morphine and Hyoscine; Morphine and Strychnine (all sizes); Morphine, Compound, Tupper; Nitroglycerin, Compound, Lilly; Novocain; Scopolamine and Morphine (all sizes.)

Soluble Tablets for Local Anaesthesia—All Strengths.

Ophthalmic Tablets—Cocaine Hydrochloride.

Veterinary Hypodermatic Tablets—Cocaine Hydrochloride (all sizes); Colic, Knowles; Morphine Sulphate (all sizes); Morphine and Atropine (all sizes.)

Tablets—Acetanilide, Compound No. 7; Acetanilide, Compound with Codeine No. 1; Acetanilide, Compound with Heroin; Acetanilide and Sodium, Compound with Codeine; Acetphenetidin, Compound with Codeine; Alum, Compound No. 1, for Injections; Alum, Compound No. 2; Ammonium Chloride, Compound with Codeine; Ammonium Chloride, Compound with Heroin; Ammonium Salicylate and Acetanilide Compound; Ammonium Salicylate and Acetanilide Compound, Half Strength; Anodyne, Expectorant, Bolton; Anodyne, Insant, Waugh; Anodyne, Lilly; Anodyne, Mild; Antiasthmatic, Stevens; Antibronchitis; Anticold; Anticold, Gordon; Antidiabetic; Antivomiting (Nos. 1 and 2); Apomorphine Hydrochloride (all sizes); Aspirin and Codeine; Aspirin, Compound, Kyle; Astringent Wash; Atropine-Aconite, Compound; Bismuth and Opium; Bismuth, Opium and Carbolic Acid; Blue Mass, Compound; Boric Acid and Potassium, Compound; Bronchitis, Delafield; Brown Mixture (all sizes); Brown Mixture and Ammonium Chloride; Calomel and Dover's Powder (all sizes); Camphor, Opium and Tannin; Cardiac, Waldstein; Chlorodyne; Chlorodyne, Half Strength; Coca, Fluid Extract; Cocaine Hydrochloride (all sizes); Cocaine and Cubeb, Compound; Codeine (all sizes); Codeine without Sugar (all sizes); Codeine Phosphate (all sizes); Codeine Sulphate (all sizes); Codeine Sulphate without Sugar (all sizes); Cold No. 3; Cold No. 3 with Aloin; Cold No. 5; Cold No. 6; Cold, Laxative, Lilly; Cold, Preferred; Copper and Opium; Coryza, No. 1; Coryza, Bishop; Coryza, No. 2; Coryza, improved, Lilly; Coryza, Kenyon; Coryza, Smith; Cough No. 1; Cough No. 2; Cough, Infant; Creosote, Compound; Diabetes; Diacetylmorphine (all sizes); Diacetylmorphine Hydrochloride (all sizes); Diaphoretic, Whitford; Diarrhea No. 2; Diarrhea No. 3, Sullivan; Dover's Powder (all sizes); Enteritis, Haskell; Expectorant, Rankin; Expectorant, Tonic; Febrifuge; Fever; Fever, Kenyon; Follicular, Tonsillitis; Gastritis; Helonias, Compound, Vaginal; Heroin (all sizes); Heroin Hydrochloride (all sizes); Heroin and Terpin Hydrate (all sizes); Hydrastine, white Alkaloid, Compound; Lead and Laudanum; Leucorrhea Mercury with Chalk and Dover's Powder; Mercury Protiodide and Opium; Morphine Acetate (all sizes); Morphine Hydrochloride (all sizes); Morphine Sulphate (all sizes); Morphine and Atropine (all sizes); Morphine and Belladonna; Naso-Pharyngeal; Nausea No. 2; Neuralgic; Neuralgic, Brown-Sequard; Neuralgic, Brown-Sequard, Half Strength; Neuralgic, Dunlap; Neuralgic, Gross; Neuralgic, Gross, Half Strength; Neuralgic, Headache, Myers; Opium, Camphorated, Tincture (all sizes); Opium, Deodorized, Tincture; Opium, Powdered (all sizes); Opium, Tincture U. S. P. (all sizes); Opium and Camphor; Opium, Ipecac and Blue Mass; Opium and Lead Acetate (all sizes); Paregoric, Compound; Potassium Chlorate and Cocaine, Voice Tablet; Quinine and Dover's Powder; Rheumatism Liggett; Salicylic Acid and Morphine; Salol, Compound; Sun Cholera; Syphilitic; Terpin Hydrate and Codeine (all sizes); Terpin Hydrate, Compound, Brockbank; Terpin Hydrate and Heroin, Compound, Lilly; Throat, Mentholated, Lilly; Throat, Quinlan; Tully's Powder (all sizes); Uterine Astringent and Antiseptic; Voice.

Dispensing Tablets—Cocaine Hydrochloride (all sizes); Codeine (all sizes); Codeine Phosphate (all sizes); Codeine Sulphate (all sizes); Heroin Hydrochloride (all sizes); Morphine Hydrochloride; Morphine Sulphate (all sizes.)

Compressed Lozenges—Glycyrrhiza and Opium U. S. P.; Pectoral, Jackson; White

Pine, Compound Cough Lozenges; Wistar's Cough Lozenges.

Elixirs—Ammonium Valerianate and Morphine; Celery, Compound; Celery, Kola and Coca, Compound; Chloroform, Compound, N. F.; Coca; Coca, Compound; Creosote and Terpin Hydrate, Compound; Heroin; Heroin, Compound; Heroin and Terpin Hydrate; Kola, Compound; Morphine Hydrochloride; Opium, Deodorized; Pectoral, or Pulmonic, Elixir; Saw Palmetto, Compound; Saw Palmetto and Pichi, Compound.

Syrups—Codeine Phosphate, Compound; Dover's Powder; Heroin, Compound; Tolu, Compound; White Pine, Compound, with Heroin.

Wines—Coca, Aromatic; Coca, Beef and Iron; Coca and Celery; Coca with Hypophosphites, Lilly.

Cordials—Calisaya, Ferrated; Coca.

Tinctures—Ipecac and Opium, U. S. P.; Opium, U. S. P.; Opium, Compound, N. F.; Opium, Deodorized, U. S. P.

Solid Extracts—Coca Leaves.

Powdered Extracts—Coca Leaves; Opium, U. S. P.; Warburg's Tincture; Warburg's Tincture, without Aloes.

Elastic Filled Capsules—Bronchial, No. 1.

Ampoules—Cocaine Hydrochloride; Morphine and Atropine (all strengths); Morphine and Hyoscine; Morphine Sulphate (all strengths.)

Chlorodyne.

Compound Cerebral, Sedative No. 1.

Dental Preparations—Cocaine Points; Devitalizing Fibre; Local Anesthetic Solution.

Glycerites—Heroin, Compound.

Inhalants, Lilly—No. 4.

Liquids—Peptones with Coca.

Ointments, Ophthalmic—Holocaine Hydrochloride.

Oleates—Cocaine, U. S. P.; Morphine, 10 per cent.

Powders—Ipecac and Opium, U. S. P.

Solutions—Cocaine Hydrochloride, 2 per cent. with Acetoform; Cocaine Hydrochloride, 4 per cent. with Acetoform.

Solvents—Alum, Compound No. 1; Alum, Compound No. 2; Astringent Wash; Cocaine Hydrochloride (all sizes); Lead and Opium; Naso-Pharyngeal; Uterine Astringent and Antiseptic; Hydrastine, White Alk., Compound.

Tablets, Vaginal—Leucorrhea, Improved; Morphine and Belladonna; Uterine, Compound.

COCA LEAVES, OPIUM AND DERIVATIVES.

Antispasmin; Apocodeine; Apomorphine Hydrochloride; Coca Leaves; Cocaine and Salts; Codeine and Salts; Codeonal; Dionin; Dover's Powder; Extract Opium; Meconin; Morphine and Salts; Narceine; Narcophin; Narcotine; Opium Powder, Gran. and Natural; Pantopon; Papaverine Alkaloid and Salts; Paracodin; Peronin; Stypticin; Styptol.

PATENT MEDICINES.

Remedy, Kansas City; Balsam, Van Werts; Balsam, S. Arnolds Diarrhœa; Remedy, Hegemans Diarrhœa; Chlorodyne, Browns; Pectoral, Wynkoops Iceland; Powder, Daniels Liniment; Syrup, Woods Soothing; Syrup, Jardells Co. Rhei and Blackberry; Compound, Davids Sedative for Cough; Lung Kuro; Anodyne, Browns; Pain Extr., Inghams, 25 cents; Liniment, Bancrofts; Tablets, Waterburys Menth. Cough; Syrup Fahrneys Teething; Rectal Suppos., Liquozone.

PHARMACEUTICALS COMING WITHIN THE EXEMPTION PROVIDED IN THE HARRISON ANTI-NARCOTIC LAW.

Pills—Warburg's Tincture (all sizes); Warburg's Tincture without Aloes (all sizes.)

Tablets—Cholera Infantum No. 2; Colic Infantile; Pinus Alba, Compound; Warburg's Tincture (all sizes); Warburg's Tincture without Aloes (all sizes.)

Lozenges—Brown Mixture; Brown Mixture and Ammonium Chloride.

Elixirs—Acetanilide, Compound, Special; Codeine Sulphate; Red Gum, Compound; Terpin Hydrate and Codeine; Terpin Hydrate, Compound.

Syrups—Codeine, Compound, Burr; Lobelia and Tolu Compound; Tar, Tolu and Wild Cherry; Terpin Hydrate, Codeine and White Pine; White Pine, Compound, Lilly (and all variations); White Pine, Compound, N. F.; White Pine, Compound, with Codeine.

Miscellaneous—Cordial Antiperiodic; Tincture Opium Camphorated, U. S. P.; Tincture Warburg's, N. F.; Tincture, Warburg's, without Aloes, N. F.; Tincture, Warburg's, Modified; E. F. C. Warburg's (all sizes); E. F. C. Warburg's without Aloes (all sizes); Bronchial Sedative, Palmer; Confects Brown Mixture; Liniment Rubefacient; Liquid Coca Leaves free from Alkaloids; Mixture Cholera Infantum; Ointment Hemorrhoidal, Lilly; Ophthalmic Ointment, Dionin 2 per cent.; Ophthalmic Ointment, Dionin and Atropine; Prunicodeine.

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SALE OF DRUG-STORE STOCK—FRAUD—EVIDENCE.

In an action of trespass on the case it was sought to recover, as damages, the difference between the actual cost price of certain drug-store stock of goods and fixtures, including a soda fountain, and the cost thereof as represented by the seller at the time of the purchase. The action was based upon alleged false and fraudulent representations of the actual cost price of the fixtures and supplies. The deal was for the capital stock of the

corporation, and not in the specific fixtures or drug supplies. The plaintiff alleged reliance on the truth of the representations. In West Virginia, the plaintiff must prove reliance upon misrepresentations as well as their falsity, though, in some states, reliance is inferred. It was held that the plaintiff had failed to show such reliance. On the contrary, he admitted that he had had twelve years' previous experience in the drug business, had examined the soda fountain, and thought its cost was about what the company had actually paid for it, according to the defendant's representations. Likewise, he also admitted he examined the other fixtures and the entire stock of goods, and that, in his opinion, the cost named by the defendant was not excessive. To quote his language: "From the way the stock looked, and the way it was fixed down in the basement, and all, it certainly appeared to me that there was that much stock," meaning, of course, according to the valuation represented to him. These admissions, it was held, tended to negative reliance by him on the verity of the defendant's representations.

Nor did the plaintiff show, except inferentially, in what respect or to what extent he suffered injury as the result of the negotiations. He admitted that he did not discover the defendant's deception until nearly three years after the purchase. During that time he made no effort to ascertain the actual cost of any of the various items discussed, pending the negotiations. The information secured as a basis for the action, he obtained from the traveling salesman of one of the furnishing companies, who, he says, was frequently at his store during these three years, and through communications by him with the other company. This information was available from the same sources before the final consummation of the deal. This fact alone would not bar his recovery, but it was held to suggest an apparent satisfaction with the transaction. By reason of want of necessary proof, judgment for the defendant was affirmed.

Keller v. Roetting, West Virginia Supreme Court, 82 S. E., 755, decided September 15, 1914.

WAR DEPARTMENT.

List of changes of stations covering period ending January 31, 1915, in the cases of Sergeants First Class, and Sergeants, Hospital Corps.

SERGEANTS FIRST CLASS.

Max Weinberg, from the Attending Surgeons Office Port of Embarkation to Ft. Banks.

Ivan N. Karlson, from Field Hospital Co. No. 5 to Jefferson Barracks.

Earl J. Down, from Jefferson Barracks, to Field Hospital Co. No. 5.

Otto A. Tandrop, from Fort Bliss, to the Philippines Department.

Thomas McKelvey, from Ambulance Co. No. 5, to the Philippines Department.

John R. Sands, from Fort Banks, to Ambulance Company No. 5.

Romanus A. LaGrinder, from Plattsburg Barracks, to West Point.

William C. Bonner, from West Point, to the Hawaiian Department.

Dorsey W. Thickstun, from Ft. Huachuca to the Hawaiian Department.

William F. Murphy, from Ft. Missoula, to Ft. Huachuca.

Burton Hardenbrook, from Ft. Leavenworth, to Ft. Missoula.

Samuel Smelsey, from Philippines Department, to Ambulance Company No. 2.

Harry A. R. Kroger, from Casually at Ft. McDowell, to Second Division for assignment.

Charles H. Jorte, from 7th Inft. Hospital 2nd Div., to the Philippines Dept.

Welcome N. Powell, from Ambulance Company No. 2, to Letterman General Hospital.

SERGEANTS

Meyer McC. Dougherty, from Ft. Screven, to Ft. McPherson.

Bruce D. Gill, from Ft. McPherson, to Ft. Screven.

Joseph Livingston, from Ft. Worden, to Walter Reed, General Hospital.

Michael Fitzgerald, from Ambulance Company No. 8, to Presidio of San Francisco.

John Aue, from Ft. Monroe, to Front Royal Remount Depot.

Frank C. Wagner, from Front Royal Remount Depot, to Ft. Monroe.

Patrick Darby, from Colorado Strike Zone, to Ft. Robinson.

Fitz. W. Donoho, from Ambulance Company No. 7, to Ft. Winfield Scott.

John A. Baker, from the Philippines Department to Ft. McDowell, for discharge.

Lewis B. Houston, from the Transport "Dix," to the Hawaiian Department.

Edwin R. Arndt, from Vancouver Barracks, to Ft. Missoula.

Fay S. Elzey, from Ft. Casey, to Ft. Worden.

Changes of Address

All changes of address of members should be sent to the General Secretary promptly.

The Association will not be responsible for non-delivery of the Annual Volume or Year Book, or of the JOURNAL unless notice of change of address is received before shipment or mailing.

Both the old and the new address should be given, thus:

HENRY MILTON,
From 2342 Albion Place, St. Louis, Mo.
To 278 Dartmouth St., Boston, Mass.

Titles or degrees to be used in publications or in the official records should be given, and names should be *plainly* written, or typewritten.

<>

W. H. RIESS,
From Office Div. Surgeon 2nd Div. Texas City, Texas.
To Ft. Howard, Md.

J. K. MEHRTENS,
From Food & Drug State Laby., Berkeley, Cal.
To Residence unknown.

I. B. PHILLIPS,
From Medical Supply Depot, Manila, P. I.
To Residence unknown.

J. J. WHITE,
From 207 Southern Bldg., Washington, D. C.
To 130 First St., N. W., Washington, D. C.

J. A. DORJAHN,
From Blue Island, Ill.
To 170 Burr Oak Ave., Blue Island, Ill.

H. W. DREYFUS,
From 4806 West End Ave., Chicago, Ill.
To 6401 Chicago Ave., Oak Park, Ill.

BERTHA G. HUFFMAN,
From 2107 Market St., St. Louis, Mo.
To 4311 Forest Park Blvd., St. Louis, Mo.

LOUIS LIBERSTEIN,
From 1126 N. Taylor Ave., St. Louis, Mo.
To 223 S. Euclid Ave., St. Louis, Mo.

G. H. ADAMICK,
From 189 N. Madison St., Chicago, Ill.
To 182 N. Madison St., Chicago, Ill.

HERMAN ENGELHARDT,
From 2910 Garrison Ave., Baltimore, Md.
To 2912 Garrison Ave., Baltimore Md.

T. C. BASYE,
From 323 Main St., Rockport, Ind.
To 318 Main St., Rockport, Ind.

F. H. FRICKE,
From 1637 N. 19th St., St. Louis, Mo.
To 3218 Hebert St., St. Louis, Mo.

MARTIN LARSON,
From Plover, Ia.
To Box 32, Callender, Ia.

EMANUEL NEWMAN,
From Lancaster, N. Y.
To Retired, care Dept. Surgeon's Office, Ft. Santiago, Manila, P. I.

E. POLONSKY,
From 1061 Broadway, Buffalo, N. Y.
To 163 Broadway, Buffalo, N. Y.

O. A. BREHLER,
From P. O. Box 375 Sanger, Cal.
To P. O. Box 128 Sanger Cal.

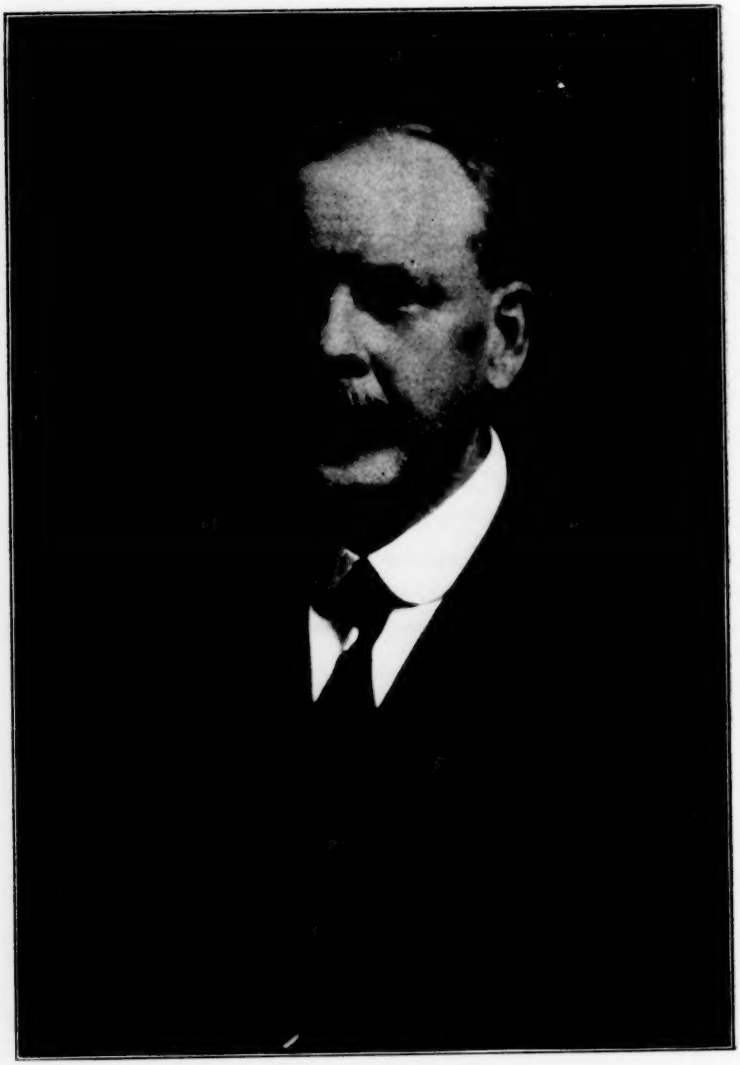
HOWARD GOODWIN,
From 221 Columbus, Ave., Boston, Mass.
To 291 Columbus Ave., Boston, Mass.

JENNIE H. SUMNER,
From 1872 Center St., Roxbury, Mass.
To 1858 Center St., Roxbury, Mass.

OTTO E. ROSS,
From Conde, S. D. care Goldthrop Drug Co.
To Conde, S. D.

TITRATION OF HYDROFERRICYANIC ACID.

When ferri- and cyan-ion are present, potassium iodide and zinc sulphate are added to the slightly acid solution. The separated iodine is titrated with thiosulphate and starch as an indicator. The influence of ferri-ion is prevented by adding a little KFl solution. Cyan-ion being present, some drops of sulphuric acid are added, and the prussic acid is expelled by means of a stream of carbonic acid at 50°. If the gas (CO_2 + HCN) is brought into a silver nitrate solution, the quantity of HCN can also be determined.—E. Müller and F. Seidel (*Zscht. Anal. Chem.*, 1914).

HENRY HURD RUSBY, M. D.

Fifty-seventh President of the American Pharmaceutical Association.
Dean, College of Pharmacy of the City of New York.
Member of the Revision Committee of the United States Pharmacopœia.
Pharmacognosist of the United States Department Agriculture of the Port of New York.
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